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Federal Aviation Agency

[14 CFR Part 121 [New]]

Proposed Certification and Operations of Scheduled Interstate Air Carriers

FEDERAL AVIATION AGENCY

[14 CFR Parts 40, 41, 42, 121 [New], 123 [New], 125 [New]]

[Special Civil Air Regs. 422, 422A, 422B, 440]

[Reg. Doc. No. 5036; Notice 64-25]

AIR CARRIER CERTIFICATION AND OPERATING RULES [NEW]

Notice of Proposed Rule Making

The Federal Aviation Agency is considering a proposal to recodify present Part 40 of the Civil Air Regulations into Part 121 [New]. In addition, we propose to consolidate into Part 121 [New] proposed Parts 123 [New] (CAR 41) and 125 [New] (CAR 42) published as notices of proposed rule making in the FEDERAL REGISTER on January 25, 1964 (29 F.R. 1348) and on May 8, 1964 (29 F.R. 6112) respectively.

Interested persons are invited to participate in the proposed recodification by submitting such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or notice number and be submitted in duplicate to the Federal Aviation Agency, Office of the General Counsel: Attention Rules Docket, 800 Independence Avenue SW., Washington, D.C., 20553. All communications received on or before July 6, 1964, will be considered by the Administrator before taking action on the proposed recodification. The proposal contained in this notice may be changed in the light of comments received. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons.

This proposal is a part of the Agency recodification program announced in Draft Release 61-25, published in the FEDERAL REGISTER on November 15, 1961 (26 F.R. 10698). This program involves no substantive changes in the regulations that would result in an increased burden on those regulated. Its purpose is simply to streamline, clarify, and consolidate the present regulatory system and delete obsolete and redundant material.

As stated in Draft Release 61-25, the recodification program has resulted in the adoption of a straight subject matter arrangement of regulations. Some of the reasons for adopting such an arrangement are as follows:

(1) It produces a more convenient and logically arranged body of regulations.

(2) It produces a more stable arrangement, since subject-matter groupings change less often and more slowly than organizational groupings.

(3) It increases the chance that similar problems will be treated similarly.

(4) It avoids the disadvantages that go with the need to repeat each relevant provision from part to part.

(5) It avoids increasing the aggregate length of the regulations.

(6) It avoids complicating the substantive and mechanical process of amending common provisions.

In accordance with the foregoing, Draft Release 61-25 proposed the consolidation of the certification rules of the air carrier parts. The consolidation of the operating rules governing air carriers was not then proposed because of a lack of uniformity in that area. However, since Draft Release 61-25 was issued, Parts 41 and 42 have been completely revised and Part 40 has been extensively amended. At this time, the majority of the regulations in these parts are identical in substance, reflecting the Agency's philosophy that similarly situated persons should be treated similarly. Accordingly, it is now possible to propose the complete consolidation of present Parts 40, 41, and 42. It should be noted in this regard that the eventual combination of the air carrier operating parts was a goal as long ago as 1950 (see CAB Draft Release 50-8, October 2, 1950).

In proposing such a consolidation, the Agency intends to carefully preserve all substantive differences in these parts. As previously stated, the recodification program does not effect substantive changes. In addition, it is recognized that while the operations governed by these Parts are in the main similar, there are differences—and that these differences do, and will probably continue to, justify different regulatory approaches in some instances. The consolidation should serve to highlight these differences—to the benefit of both the Agency and the users. With the parts consolidated, there will be no chance of future amendments containing unjustified differences or similarities.

In view of the above, it is the intention of the Agency to proceed to combine the certification and operating rules of Parts 40, 41, and 42 of the CAR's into one part, reflecting therein the appropriate comments received in the separate notices on Parts 121, 123, and 125.

Proposed Part 121 [New] reflects the recent amendment to CAR 40 published in the FEDERAL REGISTER on April 28 (29 F.R. 5627), that contained numerous changes to CAR 40, and also the amendment adding a new § 40.155 published in the FEDERAL REGISTER on April 22, 1964 (29 F.R. 5384) effective May 22, 1964. While the numerous changes to CAR 40 are scheduled to become effective on October ——, 1964, the Agency plans to have the actual effective date coincide with the effective date of the final recodified rule, thereby eliminating the making of numerous changes to CAR 40 just prior to the final issue of the recodification of that part.

Each proposed recodified section is followed by a note citing the present section of the regulations upon which it is based. A cross-reference table has been placed at the end of Part 121 [New] to permit easy access from the old regulations to the new. Internal cross references to parts or sections that are not yet recodified contain a blank space for later insertion of the correct recodified number with the present number contained in brackets. When a part or section that is referred to in a cross reference is later recodified, the correct number will be inserted and the bracketed number will be dropped.

It should be noted that the definitions, abbreviations, and rules of construction contained in Part 1 [New] published in the FEDERAL REGISTER on May 15, 1962 (27 F.R. 4587) would apply to proposed Part 121 [New]. As Part 1 [New] includes "inspection" in the definition of the term "maintenance" this proposal drops the present practice of referring to "inspection" in addition to "maintenance". The term "authorized representative of the Administrator" has also been dropped as it is included in the term "Administrator". We recognize that additional definitions must be added to Part 1 [New] before the issue of the air carrier parts (including Part 125 [New]) in final form. However, due to conflicts in the definitions of terms in these parts, no action will be taken to amend Part 1 [New] until after all the air carrier parts have been issued as notices of proposed rule making.

The language of proposed Part 121 [New] has been conformed wherever possible to comparable provisions in proposed Parts 123 [New] (29 F.R. 1347), and 125 [New] (29 F.R. 6112) including revisions to Part 123 that will result from comments received on the proposal. However, final conforming of language will reflect not only the appropriate comments received on this proposal but also the appropriate comments received on the notice of proposed rule making on Part 125 [New] (CAR 42).

When finally adopted, Part 121 [New] will include the substance of any applicable rules or amendments adopted and made effective during the period between the date of notice and the effective date of the final rule, and may also include applicable rules on which individual notices of proposed rule making have been issued and the comment period has expired, but which have not been theretofore adopted.

Appendices C and D of present Part 40 will be retained without substantive change and therefore have not been reprinted with proposed Part 121 [New]. They will be published at the time that the final rule is adopted. Appendices A and B of present Part 40 are omitted as surplusage.

Part 121 [New] is proposed under the authority of §§ 313(a), 501, 601 through 610 and 1102 of the Federal Aviation Act of 1958 (49 U.S.C. 1354(a), 1421 through 1430 and 1502).

In consideration of the foregoing, it is proposed to amend Chapter I of Title 14 of the Code of Federal Regulations by deleting Part 40 and adding a Part 121 [New] reading as hereinafter set forth.

Issued in Washington, D.C., on May 4, 1964.

N. E. HALABY,
Administrator.

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AUTHORITY: The provisions of this Part 121 [New] issued under secs. 313(a), 501, 601 through 610 and 1102 of the Federal Aviation Act of 1958; 49 U.S.C. 1354(a), 1421 through 1430 and 1502.

Subpart A—General

§ 121.1 Applicability.

This part prescribes rules governing the following persons and operations:

(a) Each air carrier holding appropriate economic authority issued by the Civil Aeronautics Board authorizing unlimited scheduled service over designated routes, when it engages in scheduled interstate air transportation with airplanes over those routes within the 48 contiguous States and the District of Columbia and, in the case of segments of routes extending outside the 48 contiguous States and the District of Columbia, operations over those route segments when the carrier is authorized by the Administrator to conduct those operations under this part.

(b) Each person employed or used by an air carrier in operations under this part, including the maintenance and preventive maintenance of airplanes.

(c) Each person who is on board an airplane being operated by an air carrier under this part.

[Revision note: Based on § 40.1]

§ 121.3 Rules applicable to operations subject to this Part.

Unless otherwise specified in this part, each air carrier shall comply with the applicable rules of Part 91 [New] of this chapter.

[Revision note: Based on § 40.2]

Subpart B—Certification and Operations Specifications

§ 121.11 Certificate and operations specifications required.

No person may operate an airplane in operations to which this part applies without, or in violation of, an air carrier operating certificate and appropriate operations specifications, issued under this part. Application forms and instructions for their completion may be obtained from any FAA Air Carrier District Office.

[Revision note: Combines §§ 40.10 and 40.18]

NOTE: § 40.18(b) omitted as surplusage.

§ 121.13 Contents of certificate and operations specifications.

(a) Each air carrier operating certificate contains the following:

(1) The air carrier's name.

(2) The airports to and from which it may operate.

(3) The approved routes over which it may operate.

These airports and routes are incorporated into the air carrier operating certificate by reference to the authorized airports and approved routes listed in that air carrier's operations specifications.

(b) Each air carrier's operations specifications contain the following:

(1) The kinds of operations authorized.

(2) The types of airplanes authorized for use.

(3) En route authorizations and limitations.

(4) Airport authorizations.

(5) Airport limitations.

(6) Time limitations, or standards for determining time limitations, for overhauls, inspections, and checks of airframes, engines, propellers, and appliances.

(7) Procedures for control of weight and balance of airplanes.

(8) Interline equipment interchange requirements, if any.

(9) Any other item that the Administrator determines is necessary to cover a particular situation.

[Revision note: Combines §§ 40.11 and 40.19]

§ 121.15 Issue of certificate.

(a) An applicant is entitled to an air carrier operating certificate if—

(1) He holds appropriate economic authority issued by the Civil Aeronautics Board; and

(2) The Administrator, after investigation, finds that he is properly and adequately equipped and able to conduct a safe operation in accordance with this part and operations specifications provided for in this part.

(b) In the case of operations conducted in small airplanes or under a temporary authorization issued by the Civil Aeronautics Board, the Administrator issues operations specifications prescribing appropriate requirements that deviate from the requirements of this part whenever, after investigation, he finds that general standards of safety for such an operation require or allow a deviation from such a requirement for a particular operation or class of operations for which an application for an air carrier operating certificate has been made.

(c) The Administrator may authorize an air carrier holding appropriate economic authority to engage in scheduled cargo-only operations in interstate air transportation to conduct those operations under Part ____ (present Part 42) of this chapter.

[Revision note: Based on § 40.13]

§ 121.17 Availability of certificate.

Each air carrier shall make its operating certificate and operations specifications available for inspection by the Administrator at its principal operations office.

[Revision note: Based on § 40.15]

§ 121.19 Duration of certificate.

(a) An air carrier operating certificate issued under this part is effective until termination of the economic authority issued by the Civil Aeronautics Board to the air carrier or until it is surrendered or the Administrator suspends, revokes, or otherwise terminates it.

(b) If the Administrator suspends or revokes an air carrier operating certificate, the holder of that certificate shall return it to the Administrator.

[Revision note: Based on § 40.16]

Note: § 40.16(b) omitted as surplusage.

§ 121.21 Use of operations specifications.

(a) Each air carrier shall keep each of its employees informed of the provisions of its operations specifications that apply to the employee's duties and responsibilities.

(b) Each air carrier shall maintain a complete and separate set of its operations specifications. In addition, each air carrier shall insert pertinent provisions of its operations specifications, or reference thereto, in its air carrier manual in such a manner that they retain their identity as operations specifications.

[Revision note: Based on § 40.20]

§ 121.23 Amendment of certificate.

(a) The Administrator may amend an air carrier operating certificate issued under this part—

(1) Upon application by the holder, if the Administrator determines that safety

in air transportation and the public interest allows the amendment; or

(2) Under section 609 of the Federal Aviation Act of 1958 (49 U.S.C. 1429) and Part 13 [New] of this chapter, if the Administrator determines that safety in air transportation and the public interest requires the amendment.

(b) An applicant for an amendment to an operating certificate issued under this Part must file his application with the FAA Air Carrier District Office charged with the overall inspection of his operations at least 15 days before the date that he proposes for the amendment to become effective, unless a shorter filing period is allowed by that office.

(c) At any time within 30 days after refusal of the District Office to approve an air carrier's application for amendment the holder may petition the Administrator personally to reconsider the refusal.

[Revision note: Based on § 40.14]

§ 121.25 Amendment of operations specifications.

(a) The Administrator may amend any operations specifications issued under this part, except those pertaining to airport and route authorizations—

(1) Upon application by the holder, if the Administrator determines that safety in air transportation and the public interest allows the amendment; or

(2) If the Administrator determines that safety in air transportation and the public interest requires the amendment.

(b) In the case of an amendment under paragraph (a) (2) of this section, the Administrator notifies the holder, in writing, of the proposed amendment, fixing a reasonable period (but not less than seven days) within which the holder may submit written information, views, and arguments on the amendment. After considering all relevant material presented, the Administrator notifies the holder of any amendment adopted, or rescinds the notice. The amendment becomes effective not less than 30 days after the holder receives notice of it, unless the holder petitions the Administrator personally to reconsider the amendment, in which case its effective date is stayed pending a decision by the Administrator. If the Administrator finds that there is an emergency requiring immediate action with respect to safety in air transportation, that makes the procedure in this paragraph impracticable or contrary to the public interest, he may issue an amendment, effective without stay, on the date the holder receives notice of it. In such a case, the Administrator incorporates the finding, and a brief statement of the reasons for it, in the notice of the amended operations sepcifications to be adopted.

(c) An applicant must file his application for an amendment of operations specifications with the FAA District Office charged with the overall inspection of its operations at least 15 days before the date that he proposes for the amendment to become effective, unless a shorter filing period is allowed by that office.

(d) Within 30 days after receiving from the District Office a notice of refusal to approve an air carrier's application for amendment, the air carrier may petition the Administrator personally to reconsider the refusal to amend.

[Revision note: Based on § 40.21]

§ 121.27 Inspection authority.

Each air carrier shall allow the Administrator, at any time or place, to make any inspections or tests to determine the carrier's compliance with the Federal Aviation Act of 1958, the Federal Aviation Regulations, its operating certificate, and its operations specifications.

[Revision note: Based on § 40.22]

§ 121.29 Change of address.

Each air carrier shall notify the FAA Air Carrier District Office charged with the overall inspection of its operations, in writing, at least 30 days in advance, of any change in the address of its principal business office, its principal operations base, or its principal maintenance base.

[Revision note: Based on § 40.23]

Subpart C—Approval of Routes

§ 121.41 Route requirements: general.

(a) Each air carrier seeking a route approval must show—

(1) That it is able to satisfactorily conduct scheduled operations between each regular, provisional, and refueling airport over that route or route segment; and

(2) That the facilities and services required by §§ 121.45 through 121.55 are available and adequate for the proposed operation.

The Administrator approves a route outside of controlled airspace if he determines that traffic density is such that an adequate level of safety can be assured.

(b) Paragraph (a) of this section does not require actual flight over a route or route segment if the air carrier shows that the flight is not essential to safety, considering the availability and adequacy of airports, lighting, maintenance, communication, navigation, fueling, ground, and airplane radio facilities, and the ability of the personnel to be used in the proposed operation.

[Revision note: Based on § 40.30]

§ 121.43 Route width.

(a) Approved routes and route segments over U.S. Federal airways, foreign airways, or advisory routes must have a width equal to the designated width of those airways or routes. Whenever the Administrator finds it necessary to determine the width of other approved routes, he considers the following:

(1) Terrain clearance.

(2) Minimum en route altitudes.

(3) Ground and airborne navigation aids.

(4) Air traffic density.

(5) ATC procedures.

(b) Any route widths determined by the Administrator are specified in the air carrier's operations specifications.

[Revision note: Based on § 40.31]

§ 121.45 Airports.

Each air carrier must show that each airport on each route it submits for approval is properly equipped and adequate for the proposed operation, considering such items as size, surface, obstructions, facilities, public protection, lighting, navigational and communications aids, and ATC.

[Revision note: Based on § 40.33]

§ 121.47 Communications facilities.

Each air carrier must show that a two-way air/ground radio communication system is available at points that will insure reliable and rapid communications, under normal operating conditions over the entire route (either direct or via approved point to point circuits) between each airplane and the appropriate dispatch office, and between each airplane and the appropriate air traffic control unit. The communications systems between each airplane and the dispatch office must be independent of any system operated by the United States.

[Revision note: Based on § 40.34]

§ 121.49 Weather reporting facilities.

(a) Each air carrier must show that enough weather reporting services are available along each route to insure weather reports and forecasts necessary for the operation.

(b) Each air carrier that uses forecasts to control flight movements shall—

(1) For operations within the 48 contiguous States and the District of Columbia, use those prepared by the U.S. Weather Bureau or a source approved by the Weather Bureau; and

(2) For operations conducted outside the 48 contiguous States and the District of Columbia under § 121.1(a), use those prepared by a source approved by the Administrator.

[Revision note: Based on § 40.35]

§ 121.51 En route navigational facilities.

(a) Except as provided in paragraph (b) of this section, each air carrier must show, for each proposed route, that nonvisual ground aids are—

(1) Available over the route for navigating aircraft within the degree of accuracy required for ATC; and

(2) Located to allow navigation to any regular, provisional, refueling, or alternate airport, within the degree of accuracy necessary for the operation involved.

Except for those aids required for routes to alternate airports, nonvisual ground aids required for approval of routes outside of controlled airspace are listed in the air carrier's operations specifications.

(b) Nonvisual ground aids are not required for—

(1) Day VFR operations that the air carrier shows can be conducted safely by pilotage because of the characteristics of the terrain; and

(2) Night VFR operations on routes that the air carrier shows have reliably lighted landmarks adequate for safe operation.

[Revision note: Based on § 40.36]

§ 121.53 Servicing and maintenance facilities.

Each air carrier must show that competent personnel and adequate facilities and equipment (including spare parts, supplies, and materials) are available at

such points along the air carrier's route as are necessary for the proper servicing, maintenance, and preventive maintenance of airplanes and auxiliary equipment.

[Revision note: Based on § 40.37]

§ 121.55 Dispatch centers.

Each air carrier must show that it has enough dispatch centers, adequate for the operations to be conducted, that are located at points necessary to insure proper operational control of each flight.

[Revision note: Based on § 40.38]

Subpart D—Manual Requirements

§ 121.71 Preparation.

Each air carrier shall prepare and keep current an air carrier manual for the use and guidance of flight and ground operations personnel in conducting its operations.

[Revision note: Based on § 40.50]

§ 121.73 Contents.

(a) Each air carrier manual required by § 121.71 must—

(1) Include instructions and information necessary to allow the personnel concerned to perform their duties and responsibilities with a high degree of safety;

(2) Be in a form that is easy to revise;

(3) Have the date of last revision on each page concerned; and

(4) Not be contrary to the provisions of any applicable regulation or the air carrier's operations specifications or operating certificate.

(b) The manual may be in two or more separate parts, containing together all of the following information, but each part must contain that part of the information that is appropriate for each group of personnel:

(1) General policies.

(2) Duties and responsibilities of each crewmember and appropriate members of the ground organization.

(3) Reference to appropriate Federal Aviation Regulations.

(4) Flight dispatching and operational control, including procedures for coordinated dispatch.

(5) En route flight, navigation, and communication procedures, including procedures for the dispatch or continuance of flight if any item of equipment required for the particular type of operation becomes inoperative or unserviceable en route.

(6) Appropriate information from the en route operations specifications, including for each approved route the types of airplanes authorized, their crew complement, the type of operation such as VFR, IFR, day, night, etc., and any other pertinent information.

(7) Appropriate information from the airport operations specifications, including for each airport—

(i) Its location;

(ii) Its designation (regular alternate, provisional, etc.);

(iii) The types of airplanes authorized;

(iv) Instrument approach procedures;

(v) Landing and takeoff minimums; and

(vi) Any other pertinent information.

(8) Takeoff, en route, and landing weight limitations.

(9) Procedures for familiarizing passengers with the use of emergency equipment during flight.

(10) Emergency equipment and procedures.

(11) The method of designating succession of command of flight crewmembers.

(12) Procedures for determining the usability of landing and takeoff areas, and for disseminating pertinent information thereon to operations personnel.

(13) Procedures for operating in periods of ice, hail, thunderstorms, turbulence, or any potentially hazardous meteorological condition.

(14) Airman training programs, including appropriate ground, flight, and emergency phases.

(15) Instructions and procedures for maintenance, preventive maintenance, and servicing.

(16) Time limitations, or standards for determining time limitations, for overhauls, inspections, and checks of airframes, engines, propellers, and appliances.

(17) Procedures for refueling airplanes, eliminating fuel contamination, protection from fire (including electrostatic protection), and supervising and protecting passengers during refueling.

(18) Airworthiness inspections, including instructions covering procedures, standards, responsibilities, and authority of inspection personnel.

(19) Methods and procedures for maintaining the airplane weight and center of gravity wtihin approved limits.

(20) Pilot and dispatcher route and airport qualification procedures.

(21) Accident notification procedures.

(22) Other information or instructions relating to safety.

(c) Each air carrier shall maintain at least one complete copy of the air carrier manual at its principal operations base.

[Revision note: Based on § 40.51]

§ 121.75 Distribution.

(a) Each air carrier shall furnish current copies (and the changes and additions thereto) of the air carrier manual or appropriate parts of it to—

(1) Appropriate ground operations and maintenance personnel of the air carrier;

(2) Crewmembers; and

(3) Representatives of the Administrator assigned to the air carrier.

(b) Each person to whom a manual, or appropriate parts of it, are furnished under paragraph (a) of this section shall keep it up to date with the changes and additions furnished to him.

[Revision note: Based on § 40.52]

§ 121.77 Airplane Flight Manual.

(a) Each air carrier shall keep a current approved Airplane Flight Manual for each type of transport category airplane that it operates.

(b) Each air carrier shall carry an approved Airplane Flight Manual, or an air carrier manual containing the information required for the Airplane Flight Manual, in each transport category airplane. If sections of the required information from the Airplane Flight Manual are incorporated in the air carrier manual, the air carrier shall clearly identify the sections as Airplane Flight Manual requirements.

[Revision note: Based on § 40.53]

Subpart E—Airplane Requirements

§ 121.91 Airplane requirements: general.

(a) No air carrier may operate an airplane unless that airplane—

(1) Is registered as a civil aircraft of the United States; and

(2) Meets the applicable airworthiness requirements of this chapter, including those relating to identification and equipment.

(b) An air carrier may use an approved weight and balance control system based on average, assumed, or estimated weight to comply with applicable airworthiness requirements and operating limitations.

[Revision note: Based on § 40.60]

§ 121.93 Airplane certification and equipment requirements.

(a) *Airplanes certificated before July 1, 1942.* No air carrier may operate an airplane that was type certificated before July 1, 1942, unless—

(1) That airplane meets the requirements of § 121.111(c); or

(2) That airplane and all other airplanes of the same or related type operated by that air carrier meet the performance requirements of §§ ____ through _____ (present §§ 4a.737–T through 4a.750–T) of Part _____ (present Part 4a) of this chapter; or §§ ____ through _____ (present §§ 4b.110 through 4b.125) of Part _____ (present Part 4b) and § 121.111 (a), (b), (d), and (e) of this chapter.

(b) *Airplanes certificated after June 30, 1942.* No air carrier may operate an airplane that was type certificated after June 30, 1942, unless it is certificated as a transport category airplane and meets the requirements of § 121.111 (a), (b), (d), and (e).

[Revision note: Based on § 40.61]

§ 121.95 Single-engine airplanes prohibited.

No air carrier may operate a single-engine airplane.

[Revision note: Based on § 40.62 (1st sentence)]

§ 121.97 Airplane limitations: type of route.

(a) Unless otherwise authorized by the Administrator based on the character of the terrain, the kind of operation, or the performance of the airplane to be used, no air carrier may operate a two-engine or three-engine airplane (except a three-engine turbine-powered airplane) over a route that contains a point farther than one hour's flying time (in still air at normal cruising speed with one engine inoperative) from an adequate airport.

(b) No air carrier may operate a land airplane (other than a DC-3, C-46, CV-340, or CV-440) in an extended over-water operation unless it is certificated or approved as adequate for ditching under the ditching provisions of Part ____ (present Part 4b) of this chapter.

[Revision note: Based on § 40.62, less 1st sentence)]

§ 121.99 Airplane proving tests.

(a) No air carrier may operate an airplane not before proven for use in air carrier operations unless an airplane of that type has had, in addition to the airplane certification tests, at least 100 hours of proving tests under the Administrator's supervision at least 50 hours of which must have been flown over authorized routes and at least 10 hours of which must have been flown at night.

(b) An air carrier may not operate an airplane of a type that has been proven for use in air carrier operations if it has not previously used that type, or if that airplane has been materially altered in design, unless—

(1) The airplane has been tested for at least 50 hours, of which at least 25 hours were over authorized routes; or

(2) The Administrator specifically authorizes deviations because special circumstances of the particular case make a literal observance of the requirements of this paragraph unnecessary.

(c) For the purposes of paragraph (b) of this section, a type of airplane is considered to be materially altered in design if the alterations include—

(1) The installation of powerplants other than those of a type similar to those with which it is certificated; or

(2) Alterations to the aircraft or its components that materially affect flight characteristics.

(d) No air carrier may carry passengers in an airplane during proving tests, except for those needed to make the test and those designated by the Administrator. However, it may carry mail, express, or other cargo, when approved.

[Revision note: Based on § 40.63]

Subpart F—Airplane Performance Operating Limitations

§ 121.111 General.

(a) Each air carrier operating a nonturbine-powered transport category airplane shall comply with §§ 121.113 through 121.125.

(b) Each air carrier operating a turbine-powered transport category airplane in passenger-carrying operations shall comply with applicable provisions of §§ 121.127 through 121.135, except that when it operates a turbopropeller-powered transport category airplane certificated after August 26, 1959, but previously type certificated with the same number of reciprocating engines, it may comply with §§ 121.113 through 121.125.

(c) Each air carrier operating a large nontransport category airplane shall comply with §§ 121.137 through 121.143 and any determination of compliance must be based only on approved performance data.

(d) The performance data in the Airplane Flight Manual applies in determining compliance with §§ 121.113 through 121.135. No person may operate a transport category turbine-powered airplane outside the operational limits specified in the Airplane Flight Manual. Where conditions are different from those on which the performance data is based, compliance is determined by interpolation or by computing the effects of changes in the specific variables, if the results of the interpolations or computations are substantially as accurate as the results of direct tests.

(e) No person may takeoff a non-turbine-powered transport category airplane at a weight that is more than the allowable weight for the runway being used (determined under the runway takeoff limitations of the transport category operating rules of this Part) after taking into account the temperature operating correction factors in § ____ or ____ of this chapter (present § 4a.749a–T or 4b.117), and set forth in the applicable Airplane Flight Manual.

(f) The Administrator may authorize deviations from the requirements in this subpart in the operations specifications, if special circumstances make a literal observance of a requirement unnecessary for safety.

(g) The ten-mile width specified in §§ 121.117 through 121.121 may be reduced to 5 miles, for not more than 20 miles, when operating VFR or where navigation facilities furnish reliable and accurate identification of high ground and obstructions located outside of 5 miles, but within 10 miles, on each side of the intended track.

[Revision note: Combines §§ 40.70, 40.76 40.90, and 40T.80, and 40T.81(d) of SR 422, SR 422A, and SR 422B]

§ 121.113 Transport category airplanes: nonturbine-powered: takeoff limitations.

(a) No person operating a nonturbine-powered transport category airplane may takeoff that airplane unless it is possible—

(1) To stop the airplane safely on the runway, as shown by the acceleration-stop distance data, at any time during takeoff until reaching critical-engine failure speed;

(2) If the critical engine fails at any time after the airplane reaches critical-engine failure speed, to continue the takeoff and reach a height of 50 feet, as indicated by the takeoff path data, before passing over the end of the runway; and

(3) To clear all obstacles either by at least 50 feet vertically (as shown by the takeoff path data) or 200 feet horizontally within the airport boundaries and 300 feet horizontally beyond the boundaries, without banking before reaching a height of 50 feet (as shown by the takeoff path data) and thereafter without banking more than 15 degrees.

(b) In applying this section, corrections must be made for any runway gradient. To allow for wind effect, takeoff data based on still air may be corrected by taking into account not more than 50 percent of any reported headwind component and not less than 150 percent of any reported tailwind component.

[Revision note: Based on § 40.72]

§ 121.115 Transport category airplanes: nonturbine-powered: weight limitations.

(a) No person may take off a nonturbine-powered transport category airplane from an airport located at an elevation outside of the range for which maximum takeoff weights have been determined for that airplane.

(b) No person may take off a nonturbine-powered transport category airplane for an airport of intended destination that is located at an elevation outside of the range for which maximum landing weights have been determined for that airplane.

(c) No person may specify, or have specified, an alternate airport that is located at an elevation outside of the range for which maximum landing weights have been determined for the nonturbine-powered transport category airplane concerned.

(d) No person may take off a nonturbine-powered transport category airplane at a weight more than the maximum authorized takeoff weight for the elevation of the airport.

(e) No person may take off a nonturbine-powered transport category airplane if its weight on arrival at the airport of destination will be more than the maximum authorized landing weight for the elevation of that airport, allowing for normal consumption of fuel and oil en route.

[Revision note: Based on § 40.71]

§ 121.117 Transport category airplanes: nonturbine-powered: en route limitations: all engines operating.

(a) No person operating a nonturbine-powered transport category airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that does not allow a rate of climb (in feet per minute), with all engines operating, of at least 6 V_{S_0} (V_{S_0} is expressed in miles per hour) at an altitude of at least 1,000 feet above the highest ground or obstruction within ten miles of each side of the intended track.

(b) This section does not apply to transport category airplanes certificated under Part 4a of the Civil Air Regulations.

[Revision note: Based on § 40.73]

§ 121.119 Transport category airplanes: nonturbine powered: en route limitations: one engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a nonturbine-powered transport category airplane may take off that airplane at a weight, allowing for normal consumption of fuel and oil, that does not allow a rate of climb (in feet per minute), with one engine inoperative, of at least $\left(0.06-\frac{0.08}{N}\right) V_{S_0}{}^2$ (N is the number of engines installed and V_{S_0} is in miles per hour) at an altitude of at least 1,000 feet above the highest ground or obstruction within 10 miles of each side of the intended track. However, for the purposes of this paragraph the rate of

climb for transport category airplanes certificated under Part 4a of the Civil Air Regulations of this chapter is 0.02 $V_{S_0}^2$.

(b) In place of the requirements of paragraph (a) of this section, a person may, under an approved procedure, operate a nonturbine-powered transport category airplane, at an all-engines-operating altitude that allows the airplane to continue, after an engine failure, to an alternate airport where a landing can be made in accordance with § 121.125, allowing for normal consumption of fuel and oil. After the assumed failure, the flight path must clear the ground and any obstruction within five miles on each side of the intended track by at least 2,000 feet.

(c) If an approved procedure under paragraph (b) of this section is used, the air carrier or commercial operator shall comply with the following:

(1) The rate of climb (as prescribed in the Airplane Flight Manual for the appropriate weight and altitude) used in calculating the airplane's flight path shall be diminished by an amount, in feet per minute, equal to $\left(0.06-\frac{0.08}{N}\right)$ $V_{S_0}^2$ (when N is the number of engines installed and V_{S_0} is expressed in miles per hour) for airplanes certificated under Part ____ (present Part 4b) of this chapter and by 0.02 $V_{S_0}^2$ for airplanes certificated under Part 4a of this chapter.

(2) The all-engines-operating altitude shall be sufficient so that in the event the critical engine becomes inoperative at any point along the route, the flight will be able to proceed to a predetermined alternate airport by use of this procedure. In determining the takeoff weight, the airplane is assumed to pass over the critical obstruction following engine failure at a point no closer to the critical obstruction than the nearest approved radio navigational fix, unless the Administrator approves a procedure established on a different basis upon the showing by the air carrier that adequate operational safeguards exist.

(3) The airplane must meet the provisions of paragraph (a) of this section at 1,000 feet above the airport used as an alternate in this procedure.

(4) The procedure must include an approved method of accounting for winds and temperatures that would otherwise adversely affect the flight path.

(5) In complying with this procedure fuel jettisoning is allowed if the air carrier shows that it has an adequate training program, that proper instructions are given to the flight crew, and all other precautions are taken to insure a safe procedure.

(6) The air carrier shall specify in the dispatch release an alternate airport that meets the requirements of § 121.519.

[Revision note: Based on § 40.74]

§ 121.121 Part ____ (Present Part 4b) transport category airplanes with four or more engines: nonturbine-powered: en route limitations: two engines inoperative.

(a) No person may operate an airplane certificated under Part ____ (present Part 4b) of this chapter and having four or more engines unless—

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of § 121.125; or

(2) It is operated at a weight allowing the airplane, with the two critical engines inoperative, to climb at 0.01 $V_{S_0}^2$ feet per minute (V_{S_0} is in miles per hour) at an altitude of 1,000 feet above the highest ground or obstruction within 10 miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

(b) For the purposes of paragraph (a)(2) of this section, it is assumed that—

(1) The two engines fail at the point that is most critical with respect to the takeoff weight;

(2) Consumption of fuel and oil is normal with all engines operating up to the point where the two engines fail and with two engines operating beyond that point;

(3) Where the engines are assumed to fail at an altitude above the prescribed minimum altitude, compliance with paragraph (a)(2) of this section need not be shown during the descent from the cruising altitude to the prescribed minimum altitude, if those requirements can be met once the prescribed minimum altitude is reached, and assuming descent to be along a net flight path and the rate of descent to be 0.0 $V_{S_0}^2$ greater than the rate in the approved performance data; and

(4) If fuel jettisoning is provided, the airplane's weight at the point where the two engines fail is considered to be not less than that which would include enough fuel to proceed to an airport meeting the requirements of § 121.125 and to arrive at an altitude of at least 1,000 feet directly over that airport.

[Revision note: Based on § 40.75]

§ 121.123 Transport category airplanes: nonturbine-powered: landing limitations; destination airport.

(a) Except as provided in paragraph (b) of this section no person operating a nonturbine-powered transport category airplane may take off that airplane, unless its weight on arrival, allowing for normal consumption of fuel and oil in flight, would allow a full stop landing at the intended destination within 60 percent of the effective length of each runway described below from a point 50 feet directly above the intersection of the obstruction clearance plane and the runway. For the purposes of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the runway with the longest effective length in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction (forecast for the expected time of arrival), the ground handling characteristics of the type of airplane, and other conditions such as landing aids and terrain, and allowing for the affect on the landing path and roll of not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) An airplane that would be prohibited from being taken off because it could not meet the requirements of paragraph (a)(2) of this section may be taken off if an alternate airport is specified that meets all of the requirements of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

[Revision note: Based on § 40.77]

§ 121.125 Transport category airplanes: nonturbine-powered: landing limitations: alternate airport.

No person may list an airport as an alternate airport in a dispatch release unless the airplane (at the weight anticipated at the time of arrival at the airport), based on the assumptions in § 121.123, can be brought to a full stop landing within 70 percent of the effective length of the runway from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

[Revision note: Based on § 40.78]

§ 121.127 Transport category airplanes: turbine-powered: takeoff limitations.

(a) No person operating a turbine-powered transport category airplane may take off that airplane at a weight greater than that specified in subparagraph (1), (2), or (3) of this paragraph, as appropriate to the requirements under which the airplane was certificated. The takeoff weight for each takeoff may not exceed the maximum weight set forth in the Airplane Flight Manual that allows takeoff within the minimum distance required for takeoff in the net takeoff flight path, or in the case of an airplane certificated under SR 422, that provides the required obstacle clearance. In determining, these maximum weights, minimum distances, and flightpaths, correction must be made for the runway to be used, the elevation of the airport, the effective runway gradient, and the ambient temperature and wind component at the time of takeoff—

(1) In the case of an airplane certificated under SR 422, at a weight greater than that allowing a takeoff flight path that clears all obstacles either by an altitude equal to (35+0.01D) feet vertically (D is the distance along the intended flight path from the end of the runway in feet), or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries;

(2) In the case of an aircraft certificated under SR 422A, at a weight greater than that allowing a net takeoff flightpath that clears all obstacles either by an altitude of 35 feet, or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries, except that if the takeoff distance includes a clearway, the clearway distance included must not be greater than one-half of the takeoff run; or

(3) In the case of an aircraft certificated under SR 422B, at a weight greater

than that allowing a net takeoff flight path that clears all obstacles either by an altitude of 35 feet, or by at least 200 feet horizontally within the airport boundaries and by at least 300 feet horizontally after passing the boundaries:

(i) The accelerate-stop distance must not exceed the length of the runway plus the length of the stopway (if present).

(ii) The takeoff distance must not exceed the length of the runway plus the length of any clearway (if present) except that the length of the clearway must not be greater than one-half the length of the runway.

(iii) The takeoff run must not be greater than the length of the runway.

(b) For the purposes of this section, it is assumed that the airplane is not banked before reaching an altitude of 50 feet, as shown by the takeoff path data in the Airplane Flight Manual, and thereafter that the maximum bank is not more than 15 degrees.

[Revision note: Combines §§ 40T.81 (less (b) and (d)) and 40T.82 of SRs 422, 422A, and 422B]

§ 121.129 Transport category airplanes: turbine-powered: en route limitations: one engine inoperative.

(a) No person operating a turbine-powered transport category airplane may take off that airplane at a weight that is greater than that which (under the approved, one engine inoperative, en route net flight path data in the Airplane Flight Manual for that airplane) will allow compliance with subparagraph (1) or (2) of this paragraph, based on the ambient temperatures expected en route:

(1) There is a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five statute miles on each side of the intended track, and, in addition, if that airplane was certificated after August 29, 1959, there is a positive slope at 1,500 feet above the airport where the airplane is assumed to land after an engine fails.

(2) The flight path allows the airplane to continue flight from the crusing altitude to an airport where a landing can be made under § 121.135, clearing all terrain and obstructions within five statute miles of the intended track by at least 2,000 feet vertically and with a positive slope at 1,000 feet above the airport where the airplane lands after an engine fails, or, if that airplane was certificated after September 30, 1958, with a positive slope at 1,500 feet above the airport where the airplane lands after an engine fails.

(b) For the purposes of paragraph (a)(2) of this section, it is assumed that—

(1) The engine fails at the most critical point en route;

(2) The airplane passes over the critical obstruction, after engine failure, at a point that is no closer to the obstruction than the nearest approved radio navigation fix, unless the Administrator authorizes a different procedure based on adequate operational safeguards;

(3) An approved method is used to allow for adverse winds;

(4) Fuel jettisoning will be approved if the air carrier shows that the crew is properly instructed, that the training program is adequate, and that all other precautions are taken to insure a safe procedure;

(5) The alternate airport is specified in the dispatch release and meets the prescribed weather minimums; and

(6) The consumption of fuel and oil after engine failure is the same as the consumption that is allowed for in the approved net flight path data in the Airplane Flight Manual.

[Revision note: Combines §§ 40T.83 (less (b)) of SRs 422, 422A, and 422B]

§ 121.131 Transport category airplanes: turbine-powered: en route limitations: two engines inoperative.

(a) *Airplanes certificated after August 26, 1957, but before October 1, 1958.* No person may operate a turbine-powered transport category airplane along an intended route unless he complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of § 121.135.

(2) Its weight, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets the requirements of § 121.135, with a net flight path (considering the ambient temperature anticipated along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within five miles on each side of the intended track, or at an altitude of 5,000 feet, whichever is higher.

For the purposes of subparagraph (2) of this paragraph, it is assumed that the two engines fail at the most critical point en route, that if fuel jettisoning is provided, the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport and to arrive at an altitude of at least 1,000 feet directly over the airport, and that the fuel and oil consumption after engine failure is the same as the consumption allowed for in the net flight path data in the Airplane Flight Manual.

(b) *Aircraft certificated after September 30, 1958, but before August 30, 1959.* No person may operate a turbine-powered transport category airplane along an intended route unless he complies with either of the following:

(1) There is no place along the intended track that is more than 90 minutes (with all engines operating at cruising power) from an airport that meets the requirements of § 121.135.

(2) Its weight, according to the two-engine-inoperative, enroute, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets the requirements of § 121.135, with a net flightpath (considering the ambient temperatures along the track) having a positive slope at an altitude of at least 1,000 feet above all terrain and obstructions within 5 miles on each side of the intended track, or at an altitude of 2,000 feet, whichever is higher.

For the purposes of subparagraph (2) of this paragraph, it is assumed that the two engines fail at the most critical point en route, that the airplane's weight at the point where the engines fail includes enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and thereafter to fly for 15 minutes at cruise power or thrust, or both, and that the consumption of fuel and oil after engine failure is the same as the consumption allowed for in the net flightpath data in the Airplane Flight Manual.

(c) *Aircraft certificated after August 29, 1959.* No person may operate a turbine-powered transport category airplane along an intended route except at a weight that, according to the two-engine-inoperative, en route, net flight path data in the Airplane Flight Manual, allows the airplane to fly from the point where the two engines are assumed to fail simultaneously to an airport that meets the requirements of § 121.135, with the net flightpath (considering the ambient temperatures anticipated along the track) clearing vertically by at least 2,000 feet all terrain and obstructions within 5 statute miles (4.34 nautical miles) on each side of the intended track. For the purposes of this paragraph, it is assumed that—

(1) The two engines fail at the most critical point en route;

(2) The net flightpath has a positive slope at 1,500 feet above the airport where the landing is assumed to be made after the engines fail;

(3) Fuel jettisoning is allowed, if the Administrator finds that the operator has an adequate training program, the flight crew has proper instructions, and other necessary precautions for a safe procedure have been taken;

(4) The airplane's weight at the point where the two engines are assumed to fail provides enough fuel to continue to the airport, to arrive at an altitude of at least 1,500 feet directly over the airport, and thereafter to fly for 15 minutes at cruise power or thrust, or both; and

(5) The consumption of fuel and oil after the engine failure is the same as the consumption that is allowed for in the net flightpath data in the Airplane Flight Manual.

[Revision note: Combines §§ 40T.83(b) of SRs 422, 422A, and 422B]

§ 121.133 Transport category airplanes: turbine-powered: landing limitations: destination airports.

(a) No person operating a turbine-powered transport category airplane may take off that airplane at such a weight that (allowing for normal consumption of fuel and oil in flight to the destination airport) the weight of the airplane on arrival would exceed the landing weight set forth in the Airplane Flight Manual for the elevation of the destination airport and the ambient temperature anticipated at the time of landing.

(b) Except as provided in paragraph (c) of this section, no person operating a turbine-powered transport category airplane may takeoff that airplane unless its weight on arrival, allowing for normal consumption of fuel and oil in flight (in accordance with the landing distance set forth in the Airplane Flight Manual for the elevation of the destination airport and the wind conditions anticipated there at the time of landing), would allow a full stop landing at the intended destination airport within 60 percent of the effective length of each runway described below from a point 50 feet above the intersection of the obstruction clearance plane and the runway. For the purpose of determining the allowable landing weight at the destination airport the following is assumed:

(1) The airplane is landed on the most favorable runway and direction, in still air.

(2) The airplane is landed on the most suitable runway considering the probable wind velocity and direction and the ground handling characteristics of the airplane, and considering other conditions such as landing aids and terrain.

(d) An airplane that would be prohibited from being taken off because it could not meet the requirements of paragraph (b)(2) of this section, may be taken off if an alternate airport is specified that meets all the requirements of this section except that the airplane can accomplish a full stop landing within 70 percent of the effective length of the runway.

[Revision note: Combines §§ 40T.81(b) and 40T.84(a) of SRs 422, 422A, and 422B]

§ 121.135 Transport category airplanes: turbine-powered: landing limitations: alternate airports.

No person may list an airport as an alternate airport in a dispatch release for a turbine-powered transport category airplane unless that airplane (based on the assumptions contained in § 121.133(c)), can be brought to a full stop landing within 70 percent of the effective length of the runway from a point 50 feet above the intersection of the obstruction clearance plane and the runway.

[Revision note: Combines §§ 40T.84 (less (a)) of SRs 422, 422A, and 422B]

§ 121.137 Nontransport category airplanes: takeoff limitations.

(a) No person operating a nontransport category airplane may take off that airplane at a weight greater than the weight that would allow the airplane to be brought to a safe stop within the effective length of the runway from any point during the takeoff before reaching 105 percent of minimum control speed or 115 percent of the power off stalling speed in the takeoff configuration, whichever is greater.

(b) For the purposes of this section—

(1) It may be assumed that takeoff power is used on all engines during the acceleration;

(2) Not more than 50 percent of the reported headwind component, or not less than 150 percent of the reported tailwind component, may be taken into account;

(3) The average runway gradient must be considered if it is more than one-half of 1 percent; and

(4) It is assumed that the airplane is operating in standard atmosphere.

[Revision note: Based on § 40.91]

§ 121.139 Nontransport category airplanes: en route limitations: one engine inoperative.

(a) Except as provided in paragraph (b) of this section, no person operating a nontransport category airplane may take off that airplane at a weight that does not allow a rate of climb of at least 50 feet a minute, with the critical engine inoperative, at an altitude of at least 1,000 feet above the highest obstruction within five miles on each side of the intended track, or 5,000 feet, whichever is higher.

(b) Notwithstanding paragraph (a) of this section, if the Administrator finds that safe operations are not impaired, a person may operate the airplane at an altitude that allows the airplane, in case of engine failure, to clear all obstructions within 5 miles on each side of the intended track by 1,000 feet. If this procedure is used, the rate of descent for the appropriate weight and altitude is assumed to be 50 feet a minute greater than the rate in the approved performance data. Before approving such a procedure, the Administrator considers the following for the route, route segment, or area concerned:

(1) The reliability of wind and weather forecasting.

(2) The location and kinds of navigation aids.

(3) The prevailing weather conditions, particularly the frequency and amount of turbulence normally encountered.

(4) Terrain features.

(5) Air traffic control problems.

(6) Any other operational factors that affect the operation.

(c) For the purposes of this section, it is assumed that—

(1) The critical engine is inoperative;

(2) The propeller of the inoperative engine is in the minimum drag position;

(3) The wing flaps and landing gear are in the most favorable position;

(4) The operating engines are operating at the maximum continuous power available;

(5) The airplane is operating in standard atmosphere; and

(6) The weight of the airplane is progressively reduced by the anticipated consumption of fuel and oil.

[Revision note: Based on § 40.92]

§ 121.141 Nontransport category airplanes: landing limitations: destination airport.

(a) No person operating a nontransport category airplane may take off that airplane at a weight that—

(1) Allowing for anticipated consumption of fuel and oil, is greater than the weight that would allow a full stop landing within 60 percent of the effective length of the most suitable runway at the destination airport; and

(2) Is greater than the weight allowable if the landing is to be made on the runway—

(i) With the greatest effective length in still air; and

(ii) Required by the probable wind, taking into account not more than 50 percent of the headwind component or not less than 150 percent of the tailwind component.

(b) For the purposes of this section, it is assumed that—

(1) The airplane passes directly over the intersection of the obstruction clearance plane and the runway at a height of 50 feet in a steady gliding approach at a true indicated airspeed of at least 1.3 V_{S_0};

(2) The landing does not require exceptional pilot skill; and

(3) The airplane is operating in standard atmosphere.

[Revision note: Based on § 40.93]

§ 121.143 Nontransport category airplanes: landing limitations: alternate airport.

No person may list an airport as an alternate airport in a dispatch release for a nontransport category airplane unless that airplane (at the weight anticipated at the time of arrival) based on the assumptions contained in § 121.141, can be brought to a full stop landing within 70 percent of the effective length of the runway.

[Revision note: Based on § 40.94]

Subpart G—Special Airworthiness Requirements: Airplanes

§ 121.161 Special airworthiness requirements: general.

(a) Except as provided in paragraph (b) of this section, no air carrier may use an airplane, powered by engines rated at more than 600 horsepower each for maximum continuous operation, that has not been certificated under Part 4b of the Civil Air Regulations in effect after October 31, 1946, or under Part ____ of this chapter (present Part 4b), unless that airplane meets the requirements of §§ 121.163 through 121.225.

(b) If the Administrator determines that, for a particular model of airplane used in cargo service, literal compliance with any requirement of §§ 121.163 through 121.225 would be extremely difficult and that compliance would not contribute materially to the objective sought, he may require compliance with only those requirements that are necessary to accomplish the basic objectives of this part.

[Revision note: Based on § 40.110]

§ 121.163 Cabin interiors.

(a) Each compartment used by the crew or passengers must meet the requirements of this section.

(b) Materials must be at least flash resistant.

(c) The wall and ceiling linings and the covering of upholstering, floors, and furnishings must be flame resistant.

(d) Each compartment where smoking is to be allowed must be equipped with self-contained ash trays that are completely removable and other compart-

ments must be placarded against smoking.

(e) Each receptacle for used towels, papers, and wastes must be of fire-resistant material and must have a cover or other means of containing possible fires started in the receptacles.

[Revision note: Based on § 40.112]

§ 121.165 Internal doors.

In any case where internal doors are equipped with louvres or other ventilating means, there must be a means convenient to the crew for closing the flow of air through the door when necessary.

[Revision note: Based on § 40.113]

§ 121.167 Ventilation.

Each passenger or crew compartment must be suitably ventilated. Carbon monoxide concentration may not be more than one part in 20,000 parts of air, and fuel fumes may not be present. In any case where partitions between compartments have louvres or other means allowing air to flow between them, there must be a means convenient to the crew for closing the flow of air through the partitions, when necessary.

[Revision note: Based on § 40.114]

§ 121.169 Fire precautions.

(a) Each compartment must be designed so that, when used for storing cargo or baggage, it meets the following requirements:

(1) No compartment may include controls, wiring, lines, equipment, or accessories that would upon damage or failure, affect the safe operation of the airplane unless the item is adequately shielded, isolated, or otherwise protected so that it cannot be damaged by movement of cargo in the compartment and so that damage to or failure of the item would not create a fire hazard in the compartment.

(2) Cargo or baggage may not interfere with the functioning of the fire-protective features of the compartment.

(3) Materials used in the construction of the compartments, including tie-down equipment, must be at least flame resistant.

(4) Each compartment must include provisions for safeguarding against fires according to the classifications set forth in paragraphs (b) through (f) of this section.

(b) *Class A.* Cargo and baggage compartments are classified in the "A" category if—

(1) A fire therein would be readily discernable to a member of the crew while at his station; and

(2) All parts of the compartment are easily accessible in flight.

There must be a hand fire extinguisher available for each Class A compartment.

(c) *Class B.* Cargo and baggage compartments are classified in the "B" category if enough access is provided while in flight to enable a member of the crew to effectively reach all of the compartment and its contents with a hand fire extinguisher and the compartment is so designed that, when the access provisions are being used, no hazardous amount of smoke, flames, or extinguishing agent enters any compartment occupied by the crew or passengers. Each Class B compartment must comply with the following:

(1) It must have a separate approved smoke or fire detector system to give warning at the pilot or flight engineer stations.

(2) There must be a hand fire extinguisher available for the compartment.

(3) It must be lined with fire-resistant material, except that additional service lining of flame-resistant material may be used.

(d) *Class C.* Cargo and baggage compartments are classified in the "C" category if they do not conform with the requirements for the "A", "B", "D", or "E" categories. Each Class C compartment must comply with the following:

(1) It must have a separate approved smoke or fire detector system to give warning at the pilot or flight engineer station.

(2) It must have an approved built-in fire-extinguishing system controlled from the pilot or flight engineer station.

(3) It must be designed to exclude hazardous quantities of smoke, flames, or extinguishing agents from entering into any compartment occupied by the crew or passengers.

(4) It must have ventilation and draft controlled so that the extinguishing agent provided can control any fire that may start in the compartment.

(5) It must be lined with fire-resistant material, except that additional service lining of flame-resistant material may be used.

(e) *Class D.* Cargo and baggage compartments are classified in the "D" category if they are so designed and constructed that a fire occurring therein will be completely confined without endangering the safety of the airplane or the occupants. Each Class D compartment must comply with the following:

(1) It must have a means to exclude hazardous quantities of smoke, flames, or noxious gases from entering any compartment occupied by the crew or passengers.

(2) Ventilation and drafts must be controlled within each compartment so that any fire likely to occur in the compartment will not progress beyond safe limits.

(3) It must be completely lined with fire-resistant material.

(4) Consideration must be given to the effect of heat within the compartment on adjacent critical parts of the airplane.

(f) *Class E.* On airplanes used for the carriage of cargo only the cabin area may be classified as a Class "E" compartment. Each Class E compartment must comply with the following:

(1) It must be completely lined with fire-resistant material.

(2) It must have a separate system of an approved type smoke or fire detector to give warning at the pilot or flight engineer station.

(3) It must have a means to shut off the ventilating air flow to or within the compartment and the controls for that means must be accessible to the flight crew in the crew compartment.

(4) It must have a means to exclude hazardous quantities of smoke, flames, or noxious gases from entering the flight crew compartment.

(5) Required crew emergency exits must be accessible under all cargo loading conditions.

[Revision note: Based on § 40.115]

§ 121.171 Proof of compliance with § 121.169.

Compliance with those provisions of § 121.169 that refer to compartment accessibility, the entry of hazardous quantities of smoke or extinguishing agent into compartments occupied by the crew or passengers, and the dissipation of the extinguishing agent in Class "C" compartments must be shown by tests in flight. During these tests it must be shown that no inadvertent operation of smoke or fire detectors in other compartments within the airplane would occur as a result of fire contained in any one compartment, either during the time it is being extinguished, or thereafter, unless the extinguishing system floods those compartments simultaneously.

[Revision note: Based on § 40.116]

§ 121.173 Propeller deicing fluid.

If combustible fluid is used for propeller deicing, the air carrier must comply with § 121.201.

[Revision note: Based on § 40.117]

§ 121.175 Pressure cross-feed arrangements.

(a) Pressure cross-feed lines may not pass through parts of the airplane used for carrying persons or cargo unless—

(1) There is a means to allow crewmembers to shut off the supply of fuel to these lines; or

(2) The lines are enclosed in a fuel and fume-proof enclosure that is ventilated and drained to the exterior of the airplane.

However, such an enclosure need not be used if those lines incorporate no fittings on or within the personnel or cargo areas and are suitably routed or protected to prevent accidental damage.

(b) Lines that can be isolated from the rest of the fuel system by valves at each end must incorporate provisions for relieving excessive pressures that may result from exposure of the isolated line to high temperatures.

[Revision note: Based on § 40.118]

§ 121.177 Location of fuel tanks.

(a) Fuel tanks must be located in accordance with § 121.203.

(b) No part of the engine nacelle skin that lies immediately behind a major air outlet from the engine compartment may be used as the wall of an integral tank.

(c) Fuel tanks must be isolated from personnel compartments by means of fume- and fuel-proof enclosures.

[Revision note: Based on § 40.119]

§ 121.179 Fuel system lines and fittings.

(a) Fuel lines must be installed and supported so as to prevent excessive vibration and so as to be adequate to

withstand loads due to fuel pressure and accelerated flight conditions.

(b) Lines connected to components of the airplanes between which there may be relative motion must incorporate provisions for flexibility.

(c) Flexible connections in lines that may be under pressure and subject to axial loading must use flexible hose assemblies rather than hose clamp connections.

(d) Flexible hose must be of an acceptable type or proven suitable for the particular application.

[Revision note: Based on § 40.120]

§ 121.181 Fuel lines and fittings in designated fire zones.

Fuel lines and fittings in each designated fire zone must comply with § 121.207.

[Revision note: Based on § 40.121]

§ 121.183 Fuel valves.

Each fuel valve must—

(a) Comply with § 121.205;

(b) Have positive stops or suitable index provisions in the "on" and "off" positions; and

(c) Be supported so that loads resulting from its operation or from accelerated flight conditions are not transmitted to the lines connected to the valve.

[Revision note: Based on § 40.122]

§ 121.185 Oil lines and fittings in designated fire zones.

Oil lines and fittings in each designated fire zone must comply with § 121.207.

[Revision note: Based on § 40.123]

§ 121.187 Oil valves.

(a) Each oil valve must—

(1) Comply with § 121.205;

(2) Have positive stops or suitable index provisions in the "on" and "off" positions; and

(3) Be supported so that loads resulting from its operation or from accelerated flight conditions are not transmitted to the lines attached to the valve.

(b) The closing of an oil shutoff means must not prevent feathering the propeller, unless equivalent safety provisions are incorporated.

[Revision note: Based on § 40.124]

§ 121.189 Oil system drains.

Accessible drains that incorporate either a manual or automatic means for positive locking in the closed position must be provided to allow safe drainage of the entire oil system.

[Revision note: Based on § 40.125]

§ 121.191 Engine breather lines.

(a) Engine breather lines must be so arranged that condensed water vapor that may freeze and obstruct the line cannot accumulate at any point.

(b) Engine breathers must discharge in a location that does not constitute a fire hazard in case foaming occurs and so that oil emitted from the line does not impinge upon the pilots' windshield.

(c) Engine breathers may not discharge into the engine air induction system.

[Revision note: Based on § 40.126]

§ 121.193 Fire walls.

Each engine, auxiliary power unit, fuel-burning heater, or other item of combustion equipment that is intended for operation in flight must be isolated from the rest of the airplane by means of firewalls or shrouds, or by other equivalent means.

[Revision note: Based on § 40.127]

§ 121.195 Fire-wall construction.

Each fire wall and shroud must—

(a) Be so made that no hazardous quantity of air, fluids, or flame can pass from the engine compartment to other parts of the airplane;

(b) Have all openings in the fire wall or shroud sealed with close-fitting fireproof grommets, bushings, or firewall fittings;

(c) Be made of fireproof material; and

(d) Be protected against corrosion.

[Revision note: Based on § 40.128]

NOTE: § 40.128 (last sentence) is omitted as not a rule.

§ 121.197 Cowling.

(a) Cowling must be made and supported so as to resist the vibration, inertia, and air loads to which it may be normally subjected.

(b) Provisions must be made to allow rapid and complete drainage of the cowling in normal ground and flight attitudes. Drains must not discharge in locations constituting a fire hazard. Parts of the cowling that are subjected to high temperatures because they are near exhaust system parts or because of exhaust gas impingement must be made of fireproof material. Unless otherwise specified in these regulations, all other parts of the cowling must be made of fire-resistant material.

[Revision note: Based on § 40.129]

§ 121.199 Engine accessory section diaphragm.

Unless equivalent protection can be shown by other means, a diaphragm that complies with § 121.195 must be provided on air-cooled engines to isolate the engine power section and all parts of the exhaust system from the engine accessory compartment.

[Revision note: Based on § 40.130]

§ 121.201 Powerplant fire protection.

(a) Designated fire zones must be protected from fire by compliance with §§ 121.203 through 121.209.

(b) Designated fire zones are—

(1) Engine accessory sections;

(2) Installations where no isolation is provided between the engine and accessory compartment; and

(3) Areas that contain auxiliary power units, fuel-burning heaters, and other combustion equipment.

[Revision note: Based on § 40.131]

§ 121.203 Flammable fluids.

(a) No tanks or reservoirs that are a part of a system containing flammable fluids or gases may be located in designated fire zones, except where the fluid contained, the design of the system, the materials used in the tank, the shutoff means, and the connections, lines, and controls provide equivalent safety.

(b) At least one-half inch of clear airspace must be provided between any tank or reservoir and a firewall or shroud isolating a designated fire zone.

[Revision note: Based on § 40.132]

§ 121.205 Shutoff means.

(a) Each engine must have a means for shutting off or otherwise preventing hazardous amounts of fuel, oil, deicer, and other flammable fluids from flowing into, within, or through any designated fire zone. However, means need not be provided to shut off flow in lines that are an integral part of an engine.

(b) The shutoff means must allow an emergency operating sequence that is compatible with the emergency operation of other equipment, such as feathering the propeller, to facilitate rapid and effective control of fires.

(c) Shutoff means must be located outside of designated fire zones, unless equivalent safety is provided, and it must be shown that no hazardous amount of flammable fluid will drain into any designated fire zone after a shut off.

(d) Adequate provisions must be made to guard against inadvertent operation of the shutoff means and to make it possible for the crew to reopen the shutoff means after it has been closed.

[Revision note: Based on § 40.133]

§ 121.207 Lines and fittings.

(a) Each line, and its fittings, that is located in a designated fire zone, if it carries flammable fluids or gases under pressure, or is attached directly to the engine, or is subject to relative motion between components (except lines and fittings forming an integral part of the engine), must be flexible and fire-resistant with fire-resistant, factory-fixed, detachable, or other approved fire-resistant ends.

(b) Lines and fittings that are not subject to pressure or to relative motion between components must be of fire-resistant materials.

[Revision note: Based on § 40.134]

§ 121.209 Vent and drain lines.

Each vent and drain line and its fittings, that is located in a designated fire zone must, if it carries flammable fluids or gases, comply with § 121.207, if the Administrator finds that its rupture or breakage may result in a fire hazard.

[Revision note: Based on § 40.135]

§ 121.211 Fire-extinguishing systems.

(a) Unless the air carrier shows that equivalent protection against destruction of the airplane in case of fire is provided by the use of fireproof materials in the nacelle and other components that would be subjected to flame, fire-extinguishing systems must be provided to serve all designated fire zones.

(b) Materials in the fire-extinguishing system must not react chemically with the extinguishing agent so as to be a hazard.

[Revision note: Based on § 40.136]

§ 121.213 Fire-extinguishing agents.

Only methyl bromide, carbon dioxide, or another agent that has been shown to provide equivalent extinguishing action may be used as a fire-extinguishing agent. If methyl bromide or any other toxic extinguishing agent is used, provisions must be made to prevent harmful concentrations of fluid or fluid vapors from entering any personnel compartment either because of leakage during normal operation of the airplane or because of discharging the fire extinguisher on the ground or in flight when there is a defect in the extinguishing system. If a methyl bromide system is used, the containers must be charged with dry agent and sealed by the fire-extinguisher manufacturer or some other person using satisfactory recharging equipment. If carbon dioxide is used, it must not be possible to discharge enough gas into the personnel compartments to create a danger of suffocating the occupants.

[Revision note: Based on § 40.137]

§ 121.215 Extinguishing agent container pressure relief.

Extinguishing agent containers must be provided with a pressure relief to prevent bursting of the container because of excessive internal pressures. The discharge line from the relief connection must terminate outside the airplane in a place convenient for inspection on the ground. An indicator must be provided at the discharge end of the line to provide a visual indication when the container has discharged.

[Revision note: Based on § 40.138]

§ 121.217 Extinguishing agent container compartment temperature.

Precautions must be taken to insure that the extinguishing agent containers are installed in places where reasonable temperatures can be maintained for effective use of the extinguishing system.

[Revision note: Based on § 40.139]

§ 121.219 Fire-extinguishing system materials.

(a) Except as provided in paragraph (b) of this section, each component of a fire-extinguishing system that is in a designated fire zone must be made of fireproof materials.

(b) Connections that are subject to relative motion between components of the airplane must be made of flexible fire-resistant materials and be located so as to minimize the probability of failure.

[Revision note: Based on § 40.140]

§ 121.221 Fire-detector systems.

Enough quick-acting fire detectors must be provided in each designated fire zone to assure the detection of any fire that may occur in that zone.

[Revision note: Based on § 40.141]

§ 121.223 Fire detectors.

Fire detectors must be made and installed in a manner that assures their ability to resist, without failure, all vibration, inertia, and other loads to which they may be normally subjected. Fire detectors must be unaffected by exposure to fumes, oil, water, or other fluids that may be present.

[Revision note: Based on § 40.142]

§ 121.225 Protection of other airplane components against fire.

(a) Except as provided in paragraph (b) of this section, all airplane surfaces aft of the nacelles in the area of one nacelle diameter on both sides of the nacelle centerline must be made of fire-resistant material.

(b) Paragraph (a) of this section does not apply to tail surfaces lying behind nacelles unless the dimensional configuration of the airplane is such that the tail surfaces could be affected readily by heat, flames, or sparks emanating from a designated fire zone or from the engine compartment of any nacelle.

[Revision note: Based on § 40.143]

§ 121.227 Control of engine rotation.

(a) Except as provided in paragraph (b) of this section, each airplane must have a means of individually stopping and restarting the rotation of any engine in flight.

(b) In the case of turbine engine installations, a means of stopping the rotation need be provided only if the Administrator finds that rotation could jeopardize the safety of the airplane.

[Revision note: Based on § 40.150]

§ 121.229 Fuel system independence.

(a) Each airplane fuel system must be arranged so that the failure of any one component does not result in the irrecoverable loss of power of more than one engine.

(b) A separate fuel tank need not be provided for each engine if the air carrier shows that the fuel system incorporates features that provide equivalent safety.

[Revision note: Based on § 40.151]

§ 121.231 Induction system ice prevention.

A means for preventing the malfunctioning of each engine due to ice accumulation in the engine air induction system must be provided for each airplane.

[Revision note: Based on § 40.152]

§ 121.233 Carriage of cargo in passenger compartments.

(a) Except as provided in paragraph (b) or (c) of this section, no air carier may carry cargo in the passenger compartment of an airplane.

(b) Cargo may be carried aft of the foremost seated passengers if it is carried in an approved cargo bin that meets the following requirements:

(1) The bin must withstand the load factors and emergency landing conditions applicable to the passenger seats of the airplane in which the bin is installed, multiplied by a factor of 1.15, using the combined weight of the bin and the maximum weight of cargo that may be carried in the bin.

(2) The maximum weight of cargo that the bin is approved to carry and any instructions necessary to insure proper weight distribution within the bin must be conspicuously marked on the bin.

(3) The bin may not impose any load on the floor or other structure of the airplane that exceeds the load limitations of that structure.

(4) The bin must be attached to the seat tracks or to the floor structure of the airplane, and its attachment must withstand the load factors and emergency landing conditions applicable to the passenger seats of the airplane in which the bin is installed, multiplied by either the factor 1.15 or the seat attachment factor specified for the airplane, whichever is greater, using the combined weight of the bin and the maximum weight of cargo that may be carried in the bin.

(5) The bin may not be installed in a position that restricts access to or use of any required emergency exit, or of the aisle in the passenger compartment.

(6) The bin must be fully enclosed and made of material that is at least flame resistant.

(7) Suitable safeguards must be provided within the bin to prevent the cargo from shifting under emergency landing conditions.

(8) The bin may not be installed in a position that obscures any passenger's view of the "seat belt" sign "no smoking" sign, or any required exit sign, unless an auxiliary sign or other approved means for proper notification of the passenger is provided.

(c) Cargo may be carried forward of the foremost seated passengers if carried either in approved cargo bins as specified in paragraph (b) of this section, or in accordance with the following:

(1) It is properly secured by a safety belt or other tiedown having enough strength to eliminate the possibility of shifting under all normally anticipated flight and ground conditions.

(2) It is packaged or covered in a manner to avoid possible injury to passengers.

(3) It does not impose any load on seats or the floor structure that exceeds the load limitation for those compartments.

(4) Its location does not restrict access to or use of any required emergency or regular exit, or of the aisle in the passenger compartment.

(5) Its location does not obscure any passenger's view of the "seat belt" sign, "no smoking" sign, or required exit sign, unless an auxiliary sign or other approved means for proper notification of the passenger is provided.

[Revision note: Based on § 40.153]

§ 121.235 Carriage of cargo in cargo compartments.

When cargo is carried in cargo compartments that are designed to require the physical entry of a crewmember to extinguish any fire that may occur during flight, the cargo must be loaded so as to allow a crewmember to effectively reach all parts of the compartment with the contents of a hand fire extinguisher.

[Revision note: Based on § 40.154]

§ 121.237 Landing gear: aural warning device.

(a) Except as provided in paragraph (d) of this section, after April 30, 1965,

each large landplane must have a landing gear aural warning device that functions continuously:

(1) For airplanes with an established approach wing-flap position, whenever the wing flaps are extended beyond the maximum certificated approach climb configuration position in the Airplane Flight Manual and the landing gear is not fully extended and locked.

(2) For airplanes without an established approach climb wing-flap position, whenever the wing flaps are extended beyond the position at which landing gear extension is normally performed and the landing gear is not fully extended and locked.

(b) The warning system required by paragraph (a) of this section—

(1) May not have a manual shutoff;

(2) Must be in addition to the throttle-actuated device installed under the type certification airworthiness requirements; and

(3) May utilize any part of the throttle-actuated system including the aural warning device.

(c) The flap position sensing unit may be installed at any suitable place in the airplane.

(d) Before February 1, 1965, an air carrier may apply in writing (including supporting data) for an extension beyond the date set forth in paragraph (a) of this section, but not beyond August 1, 1965. The application must be made to the FAA principal inspector as signed to the air carrier. Such an inspector may grant an extension if he finds that the air carrier—

(1) Has made a diligent effort to comply with this section but is unable to do so because of procurement or installation problems beyond its control; and

(2) Has taken action to comply with this section as soon after April 30, 1965, as possible.

[Revision note: Based on § 40.155]

Subpart H—Instrument and Equipment Requirements

§ 121.251 Airplane instruments and equipment.

(a) Unless otherwise specified, the instrument and equipment requirements of this subpart apply to all operations under this part.

(b) Instruments and equipment required by §§ 121.253 through 121.303 must be approved and installed in accordance with the airworthiness requirements applicable to them.

(c) Each airspeed indicator must be calibrated in knots, and each airspeed limitation and item of related information in the Airplane Flight Manual and pertinent placards must be expressed in knots.

(d) Except as provided in § 121.521 (b) and (c), no person may take off any airplane unless the following instruments and equipment are in operable condition:

(1) Instruments and equipment required to comply with airworthiness requirements under which the airplane is type certificated and as required by §§ 121.161 through 121.237.

(2) Instruments and equipment specified in §§ 121.253 through 121.269 for all operations, and the instruments and equipment specified in §§ 121.271 through 121.303 for the kind of operation indicated, wherever these items are not already required by subparagraph (1) of this paragraph.

[Revision note: Based on § 40.170]

§ 121.253 Flight and navigational equipment.

No person may operate an airplane unless it is equipped with the following flight and navigational instruments and equipment:

(a) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing.

(b) A sensitive altimeter.

(c) A sweep-second clock.

(d) A free-air temperature indicator.

(e) A gyroscopic bank and pitch indicator (artificial horizon).

(f) A gyroscopic rate-of-turn indicator combined with a slip-skid indicator (turn-and-bank indicator).

(g) A gyroscopic direction indicator (directional gyro or equivalent).

(h) A magnetic compass.

(i) A vertical speed indicator (rate-of-climb indicator).

[Revision note: Based on § 40.171]

§ 121.255 Engine instruments.

Unless the Administrator allows or requires different instrumentation for turbine-powered airplanes to provide equivalent safety, no person may conduct any operation under this part without the following engine instruments:

(a) A carburetor air temperature indicator for each engine.

(b) A cylinder head temperature indicator for each air-cooled engine.

(c) A fuel pressure indicator for each engine.

(d) A fuel flowmeter or fuel mixture indicator for each engine not equipped with an automatic altitude mixture control.

(e) A means for indicating fuel quantity in each fuel tank to be used.

(f) A manifold pressure indicator for each engine.

(g) An oil pressure indicator for each engine.

(h) An oil quantity indicator for each oil tank when a transfer or separate oil reserve supply is used.

(i) An oil-in temperature indicator for each engine.

(j) A tachometer for each engine.

(k) An independent fuel pressure warning device for each engine or a master warning device for all engines with a means for isolating the individual warning circuits from the master warning device.

(l) A device for each reversible propeller to indicate to the pilot when the propeller is in reverse pitch, that complies with the following:

(1) The device may be actuated at any point in the reversing cycle between the normal low pitch stop position and full reverse pitch, but it may not give an indication at or above the normal low pitch stop position.

(2) The source of indication must be actuated by the propeller blade angle or be directly responsive to it.

[Revision note: Based on § 40.172]

§ 121.257 Emergency equipment.

(a) *General.* No person may operate an airplane unless it is equipped with the emergency equipment listed in this section.

(b) Each item of emergency equipment—

(1) Must be inspected regularly in accordance with inspection periods established in the operations specifications to insure its continued serviceability and immediate readiness for its intended emergency purposes;

(2) Must be readily accessible to the crew;

(3) Must clearly indicate its method of operation; and

(4) When carried in a compartment or container, must have that compartment or container marked as to contents and date of last inspection.

(c) *Hand fire extinguishers for crew, passenger, and cargo compartments.* Hand fire extinguishers of an approved type must be provided for use in crew, passenger, and cargo compartments in accordance with the following:

(1) The type and quantity of extinguishing agent must be suitable for the kinds of fires likely to occur in the compartment where the extinguisher is intended to be used.

(2) At least one hand fire extinguisher must be provided and conveniently located on the flight deck for use by the flight crew.

(3) At least one hand fire extinguisher must be conveniently located in the passenger compartment of each airplane accommodating more than 6 but less than 31 passengers, and at least two hand fire extinguishers must be conveniently located in each airplane accommodating more than 30 passengers.

(d) *First-aid equipment.* Approved first-aid kits for treatment of injuries likely to occur in flight or in minor accidents must be provided and must meet the specifications and requirements of Appendix D.

(e) *Crash ax.* Each airplane must be equipped with a crash ax.

(f) *Means for emergency evacuation.* Each passenger-carrying airplane must have a means to help occupants descend from the airplane from each emergency exit that is more than six feet from the ground with the landing gear extended. At approved floor level emergency exits, this means must be a chute or equivalent device suitable for rapid evacuation of passengers and must be in position during flight for immediate installation and ready use. This paragraph does not apply if the emergency exit is over a wing and the distance from the lower sill of the exit to the surface of the wing is 36 inches or less.

(g) *Interior emergency exit markings.* Each passenger-carrying airplane emergency exit, means of access, and means of opening, must be conspicuously marked. The identity and location of each emergency exit must be recognizable from a distance equal to the width

of the cabin. The location of the emergency exit operating handle and the instructions for opening must be marked on or adjacent to the emergency exit and must be readable from at least 30 inches by a person with normal eyesight.

(h) *Lighting for interior emergency exit markings.* Each passenger-carrying airplane must have a source or sources of light with an energy supply that is independent of the main lighting system for each passenger emergency exit marking. Each light must be designed to—

(1) Function automatically in a crash landing, to continue functioning thereafter, and to be manually operable; or

(2) Be manually operable only and to continue functioning after a crash landing.

If a light requires manual operation, it must be turned on before each takeoff and landing. If a light requires arming of the system to function automatically, the system must be armed before each takeoff and landing.

[Revision note: Based on § 40.173]

§ 121.259 Seat and safety belts.

(a) No air carrier may operate an airplane unless there are available during the takeoff, en route flight, and landing—

(1) An approved seat or berth for each person over 2 years of age aboard the airplane; and

(2) An approved safety belt for separate use by each person over 2 years of age aboard the airplane, except that two persons occupying a berth may share one approved safety belt and two persons occupying a multiple lounge or divan seat may share one approved safety belt during en route flight only.

(b) During the takeoff or landing of an airplane, each person on board shall occupy an approved seat or berth and secure himself with the approved safety belt provided him. However, a person who is 2 years of age or less may be held by an adult who is occupying a seat or berth. A safety belt provided for the occupant of a seat may not be used by more than one adult during takeoff or landing.

[Revision note: Based on § 40.174]

§121.261 Miscellaneous equipment.

(a) No person may conduct any operation unless the equipment listed in paragraphs (b) through (j) of this section is installed in the airplane.

(b) If protective fuses are installed on an airplane, the number of spare fuses approved for that airplane and appropriately described in the air carrier manual must be carried aboard the airplane.

(c) There must be a windshield wiper or equivalent for each pilot station.

(d) There must be a power supply and distribution system that meets the requirements of §§ ----, ----, ----, ----, ----, and ---- (present §§ 4b.606 (a), (b), and (c), 4b.612(e), 4b.622 (a) and (b), 4b.623, 4b.625, and 4b.650(b)) or that is able to produce and distribute the load for the required instruments and equipment, with use of an external power supply if any one power source or component of the power distribution system fails. The use of common elements in the system may be approved if the air carrier shows that they are designed to be reasonably protected against malfunctioning. Engine-driven sources of energy, when used, must be on separate engines.

(e) There must be a means for indicating the adequacy of the power being supplied to required flight instruments.

(f) There must be two independent static pressure systems, vented to the outside atmospheric pressure so that they will be least affected by air flow variation or moisture or other foreign matter, and installed so as to be airtight except for the vent. When a means is provided for transferring an instrument from its primary operating system to an alternate system, the means must include a positive positioning control and must be marked to indicate clearly which system is being used.

(g) There must be a means for locking all companionway doors that separate passenger compartments from flight crew compartments.

(h) There must be a key for each door that separates a passenger compartment from another compartment that has emergency exit provisions. The key must be readily available for each crewmember.

(i) Each door that is the means of access to a required passenger emergency exit must be placarded to indicate that it must be open during takeoff and landing.

(j) Each door that leads to a compartment that is normally accessible to passengers and that can be locked by passengers must be provided with a means for unlocking by the crew in the event of an emergency.

[Revision note: Combines §§ 40.175 and 40.175–1(a)]

NOTE: § 40.175(g) is omitted as obsolete.

§ 121.263 Cockpit check procedure.

(a) Each air carrier shall provide an approved cockpit check procedure for each type of airplane.

(b) The approved procedures must include each item necessary for flight crewmembers to check for safety before starting engines, taking off, or landing, and in engine and systems emergencies. The procedures must be designed so as to obviate the necessity for a flight crewmember to rely upon his memory for items to be checked.

(c) The approved procedures must be readily usable in the cockpit of each airplane and the flight crew shall follow them when operating the airplane.

[Revision note: Based on § 40.176]

§ 121.265 Passenger information.

(a) No person may operate an airplane unless it is equipped with signs that are visible to passengers and cabin attendants to notify them when smoking is prohibited and when safety belts should be fastened. The signs must be so constructed that the crew can turn them on and off, and must be turned on for each takeoff and each landing and when otherwise considered to be necessary by the pilot in command.

(b) No passenger or cabin attendant may smoke while the no smoking sign is lighted and each passenger shall fasten his seat belt and keep it fastened while the seat belt sign is lighted.

[Revision note: Based on § 40.177]

§ 121.267 Exterior exits and evacuation markings.

No person may operate an airplane unless the exterior surfaces of the airplane are marked to clearly identify each required emergency exit. If the exits are operable from the outside, the markings must consist of or include information indicating the method of opening.

[Revision note: Based on § 40.178]

§ 121.269 Shoulder harness.

No person may operate a transport category airplane that was certificated after January 1, 1958, unless it is equipped with a shoulder harness at the pilot in command station, the second in command station, and the flight engineer station.

[Revision note: Based on § 40.179]

§ 121.271 Instruments and equipment for operations at night.

No person may operate an airplane at night unless it is equipped with the following instruments and equipment in addition to those required by §§ 121.253 through 121.269:

(a) Position lights.

(b) An anti-collision light, for large airplanes.

(c) Two landing lights.

(d) Instrument lights providing enough light to make each required instrument, switch, or similar instrument, easily readable and installed so that the direct rays are shielded from the flight crewmembers' eyes and that no objectionable reflections are visible to them. There must be a means of controlling the intensity of illumination unless the air carrier or commercial operator shows that nondimming instrument lights are satisfactory.

(e) An airspeed indicating system with heated pitot tube or equivalent means for preventing malfunctioning due to icing.

(f) A sensitive altimeter.

[Revision note: Based on § 40.200]

§ 121.273 Instruments and equipment for operations under IFR or over-the-top.

No person may operate an airplane under IFR or over-the-top conditions unless it is equipped with the following instruments and equipment, in addition to those required by §§ 121.253 through 121.269:

(a) An airspeed indicating system with heated pitot tube or equivalent means of preventing malfunctioning due to icing.

(b) A sensitive altimeter.

(c) Instrument lights providing enough light to make each required instrument, switch, or similar instrument, easily readable and so installed that the direct rays are shielded from the flight crewmembers' eyes and that no objectionable reflections are visible to them, and a means of controlling the intensity

of illumination unless the air carrier or commercial operator shows that nondimming instrument lights are satisfactory.

[Revision note: Based on § 40.201]

§ 121.275 Supplemental oxygen; reciprocating-engine-powered airplanes.

(a) *General.* Except where supplemental oxygen is provided in accordance with § 121.279, no person may operate an airplane unless supplemental oxygen is furnished and used as set forth in paragraphs (b) and (c) of this section. The amount of supplemental oxygen required for a particular operation is determined on the basis of flight altitudes and flight duration, consistent with the operation procedures established for each operation and route.

(b) *Crewmembers.*

(1) At cabin pressure altitudes above 10,000 feet up to and including 12,000 feet, oxygen must be provided for, and used by, each member of the flight crew on flight deck duty, and must be provided for other crewmembers, for that part of the flight at those altitudes that is of more than 30 minutes duration.

(2) At cabin pressure altitudes above 12,000 feet, oxygen must be provided for, and used by, each member of the flight crew on flight deck duty, and must be provided for other crewmembers, during the entire flight time at those altitudes.

(c) *Passengers.* Each air carrier shall provide a supply of oxygen, approved for passenger safety, in accordance with the following:

(1) For flights of more than 30 minutes duration at cabin pressure altitudes above 8,000 feet up to and including 14,000 feet, enough oxygen for 30 minutes for 10 percent of the passengers.

(2) For flights at cabin pressure altitudes above 14,000 feet up to and including 15,000 feet, enough oxygen for that part of the flight at those altitudes for 30 percent of the passengers.

(3) For flights at cabin pressure altitudes above 15,000 feet, enough oxygen for each passenger carried during the entire flight at those altitudes.

(d) For the purposes of this subpart "cabin pressure altitude" means the pressure altitude corresponding with the pressure in the cabin of the airplane, and "flight altitude" means the altitude above sea level at which the airplane is operated. For airplanes without pressurized cabins, "cabin pressure altitude" and "flight altitude" mean the same thing.

[Revision note: Based on § 40.202]

§ 121.277 Supplemental oxygen for sustenance; turbine-powered airplanes.

(a) *General.* When operating a turbine-powered airplane, each air carrier shall equip the airplane with sustaining oxygen and dispensing equipment for use as set forth in this section:

(1) The amount of oxygen provided must be at least the quantity necessary to comply with paragraphs (b) and (c) of this section.

(2) The amount of sustaining and first-aid oxygen required for a particular operation to comply with the rules in this Part is determined on the basis of cabin pressure altitudes and flight duration, consistent with the operating procedures established for each operation and route.

(3) The requirements for airplanes with pressurized cabins is determined on the basis of cabin pressure altitude and the assumption that a cabin pressurization failure will occur at the altitude or point of flight that is most critical from the standpoint of oxygen need, and that after the failure the airplane will descend in accordance with the emergency procedures specified in the Airplane Flight Manual, without exceeding its operating limitations, to a flight altitude that will allow successful termination of the flight.

(4) Following the failure the cabin pressure altitude is considered to be the same as the flight altitude unless the air carrier shows that no probable failure of the cabin or pressurization equipment will result in a cabin pressure altitude equal to the flight altitude. Under those circumstances, the maximum cabin pressure altitude attained may be used as a basis for certification or determination of oxygen supply, or both.

(b) *Crewmembers.* Each air carrier shall provide a supply of oxygen for crewmembers in accordance with the following:

(1) At cabin pressure altitudes above 10,000 feet up to and including 12,000 feet, oxygen must be provided for and used by each member of the flight crew on flight deck duty and must be provided for other crewmembers for that part of the flight at those altitudes that is of more than 30 minutes duration.

(2) At cabin pressure altitudes above 12,000 feet, oxygen must be provided for, and used by, each member of the flight crew on flight deck duty, and must be provided for other crewmembers during the entire flight at those altitudes.

(c) *Passengers.* Each air carrier shall provide a supply of oxygen for passengers in accordance with the following:

(1) For flights at cabin pressure altitudes above 10,000 feet up to and including 14,000 feet, enough oxygen for that part of the flight at those altitudes that is of more than 30 minutes duration, for 10 percent of the passengers.

(2) For flights at cabin pressure altitudes above 14,000 feet up to and including 15,000 feet, enough oxygen for that part of the flight at those altitudes for 30 percent of the passengers.

(3) For flights at cabin pressure altitudes above 15,000 feet, enough oxygen for each passenger carried during the entire flight at those altitudes.

[Revision note: Based on § 40.202-T]

§ 121.279 Supplemental oxygen requirements for pressurized cabin airplanes: reciprocating-engine-powered airplanes.

(a) When operating a pressurized cabin airplane, each air carrier shall equip the airplane to comply with paragraphs (b) through (d) of this section in the event of cabin pressurization failure.

(b) *For crewmembers.* When operating at flight altitudes above 10,000 feet, the air carrier shall provide enough oxygen for each crewmember for the entire flight at those altitudes and not less than a two-hour supply for each flight crewmember on flight deck duty. The oxygen required by § 121.285 may be considered in determining the supplemental breathing supply required for flight crewmembers on flight deck duty in the event of cabin pressurization failure.

(c) *For passengers.* When operating at flight altitudes above 8,000 feet, the air carrier shall provide oxygen as follows:

(1) When an airplane is not flown at a flight altitude above 25,000 feet, enough oxygen for 30 minutes for 10 percent of the passengers, if at any point along the route to be flown the airplane can safely descend to a flight altitude of 14,000 feet or less within four minutes.

(2) If the airplane cannot descend to a flight altitude of 14,000 feet or less within four minutes, the following supply of oxygen must be provided:

(i) For that part of the flight that is more than four minutes duration at flight altitudes above 15,000 feet, the supply required by § 121.275(c)(3).

(ii) For that part of the flight at flight altitudes above 14,000 feet up to and including 15,000 feet, the supply required by § 121.275(c)(2).

(iii) For flight at flight altitudes above 8,000 feet up to and including 14,000 feet, enough oxygen for 30 minutes for 10 percent of the passengers.

(3) When an airplane is flown at a flight altitude above 25,000 feet, enough oxygen to allow the airplane to descend to an appropriate flight altitude at which the flight can be safely continued. In addition, it must furnish enough oxygen for 30 minutes for 10 percent of the passengers for the entire flight above 8,000 feet up to and including 14,000 feet, and to comply with § 121.275(c) (2) and (3) for flight above 14,000 feet.

(d) For the purposes of this section it is assumed that the cabin pressurization failure occurs at a time during flight that is critical from the standpoint of oxygen need and that after the failure the airplane will descend, without exceeding its normal operating limitations, to flight altitudes allowing safe flight with respect to terrain clearance.

[Revision note: Based on § 40.203]

§ 121.281 Supplemental oxygen for emergency descent and for first aid; turbine-powered airplanes with pressurized cabins.

(a) *General.* When operating a turbine-powered airplane with a pressurized cabin, the air carrier shall furnish oxygen and dispensing equipment to comply with paragraphs (b) through (e) of this section in the event of cabin pressurization failure.

(b) *Crewmembers.* When operating at flight altitudes above 10,000 feet, the air carrier shall supply enough oxygen to comply with § 121.277, but not less than a two-hour supply for each flight crewmember on flight deck duty. The oxygen required by § 121.285 may be included in determining the supply required for flight crewmembers on flight deck duty in the event of cabin pressurization failure.

(c) *Use of oxygen masks by flight crewmembers.* (1) When operating at flight altitudes above 25,000 feet, each flight crewmember on flight deck duty must be provided with an oxygen mask so designed that it can be rapidly placed on his face from its ready position, properly secured, sealed, and supplying oxygen upon demand; and so designed that after being placed on the face it does not prevent immediate communication between the flight crewmember and other crewmembers over the airplane intercommunication system. When it is not being used at flight altitudes above 25,000 feet, the oxygen mask must be kept in condition for ready use and located so as to be within the immediate reach of the flight crewmember while at his duty station.

(2) When operating at flight altitudes above 25,000 feet, one pilot at the controls of the airplane shall at all times wear and use an oxygen mask secured, sealed, and supplying oxygen, except that the one pilot need not wear and use an oxygen mask while at or below 35,000 feet if each flight crewmember on flight deck duty has a quick-donning type of oxygen mask that the air carrier has shown can be placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand, with one hand and within five seconds. The air carrier and commercial operator shall also show that the mask can be put on without disturbing eye glasses and without delaying the flight crewmember from proceeding with his assigned emergency duties. The oxygen mask after being put on must not prevent immediate communication between the flight crewmember and other crewmembers over the airplane intercommunication system.

(3) Notwithstanding subparagraph (2) of this paragraph, if for any reason at any time it is necessary for one pilot to leave his station at the controls of the airplane when operating at flight altitudes above 25,000 feet, the remaining pilot at the controls shall put on and use his oxygen mask until the other pilot has returned to his duty station.

(4) Before the takeoff of a flight, each flight crewmember shall personally preflight his oxygen equipment to insure that the oxygen mask is functioning, fitted properly, and connected to appropriate supply terminals, and that the oxygen supply and pressure are adequate for use.

(d) *Use of portable oxygen equipment by cabin attendants.* Each attendant shall, during flight above 25,000 feet flight altitude, carry portable oxygen equipment with at least a 15-minute supply of oxygen unless it is shown that enough portable oxygen units with masks or spare outlets and masks are distributed throughout the cabin to insure immediate availability of oxygen to each cabin attendant, regardless of his location at the time of cabin depressurization.

(e) *Passenger cabin occupants.* When operating at flight altitudes above 10,000 feet, the following supply of oxygen must be provided for the use of passenger cabin occupants:

(1) When an airplane certificated to operate at flight altitudes up to and including 25,000 feet, can at any point along the route to be flown, descend safely to a flight altitude of 14,000 feet or less within four minutes, oxygen must be available at the rate prescribed by this Part for a 30-minute period for at least 10 percent of the passenger cabin occupants.

(2) When an airplane is operated at flight altitudes up to and including 25,000 feet and cannot descend safely to a flight altitude of 14,000 feet within four minutes, or when an airplane is operated at flight altitudes above 25,000 feet, oxygen must be available at the rate prescribed by this part for not less than 10 percent of the passenger cabin occupants for the entire flight after cabin depressurization, at cabin pressure altitudes above 10,000 feet up to and including 14,000 feet and, as applicable, to allow compliance with § 121.277(c) (2) and (3), except that there must be not less than a 10-minute supply for the passenger cabin occupants.

(3) For first-aid treatment of occupants who for physiological reasons might require undiluted oxygen following descent from cabin pressure altitudes above 25,000 feet, a supply of oxygen in accordance with the requirements of § ___ (§ 4b.651(b)(4)) must be provided for two percent of the occupants for the entire flight after cabin depressurization at cabin pressure altitudes above 8,000 feet, but in no case to less than one person. An appropriate number of acceptable dispensing units, but in no case less than two, must be provided, with a means for the cabin attendants to use this supply.

(f) *Passenger briefing.* Before flight is conducted above 25,000 feet, a crewmember shall instruct the passengers on the necessity of using oxygen in the event of cabin depressurization and shall point out to them the location and operation of the oxygen-dispensing equipment.

[Revision note: Based on § 40.203–T]

§ 121.283 Equipment standards.

(a) *Nonturbine-powered airplanes.* The oxygen apparatus, the minimum rates of oxygen flow, and the supply of oxygen necessary to comply with § 121.275 must meet the standards established in § _____ (§ 4b.651) of this chapter effective July 20, 1950, except that if the air carrier shows full compliance with those standards to be impracticable, the Administrator may authorize any change in those standards that he finds will provide an equivalent level of safety.

(b) *Turbine-powered airplanes.* The oxygen apparatus, the minimum rate of oxygen flow, and the supply of oxygen necessary to comply with §§ 121.277 and 121.281 must meet the standards established in § ____ (§ 4b.651) of this chapter as in effect on September 1, 1958, except that if the air carrier shows full compliance with those standards to be impracticable, the Administrator may authorize any changes in those standards that he finds will provide an equivalent level of safety.

[Revision note: Based on § 40.204]

§ 121.285 Protective breathing equipment for the flight crew.

(a) *Pressurized cabin airplanes.* Each required flight crewmember on flight deck duty must have readily available at his station protective breathing equipment covering the eyes, nose, and mouth (or the nose and mouth if accessory equipment is provided to protect the eyes) to protect him from the effects of smoke or carbon dioxide or other harmful gases. There must be at least a 300-liter standard temperature and pressure dry supply of oxygen for each required flight crewmember on flight deck duty. (Standard temperature and pressure dry oxygen at 0° centigrade, 760 mm. Hg.)

(b) *Nonpressurized cabin airplanes.* Each air carrier operating a nonpressurized cabin airplane that has a built-in carbon dioxide fire extinguisher system in a fuselage compartment shall provide protective breathing equipment for the flight crew, except where—

(1) Not more than five pounds of carbon dioxide would be discharged into any compartment in accordance with established fire control procedures; or

(2) The carbon dioxide concentration at the flight crew station has been determined in accordance with § _____ (present § 4b.484–1), and has been found to be less than three percent by volume (corrected to standard sea-level condition).

[Revision note: Combines §§ 40.205 and 40.205–1]

§ 121.287 Equipment for extended overwater operations.

(a) Except where the Administrator, by amending the operations specifications of the air carrier, requires the carriage of all or any specific items of the equipment listed below for any overwater operation, or upon application of the carrier, the Administrator allows deviation for a particular extended overwater operation, no person may operate an airplane in extended overwater operations without having on the airplane the following equipment:

(1) A life preserver for each occupant of the airplane.

(2) Enough liferafts of a rated capacity and buoyancy to accommodate the occupants of the airplane.

(3) Suitable pyrotechnic signaling devices.

(4) One self-buoyant, water-resistant, portable emergency radio signaling device, that is capable of transmission on the appropriate emergency frequency or frequencies, and not dependent upon the airplane power supply.

(b) The required life rafts, life preservers, and signaling devices must be easily accessible in the event of a ditching without appreciable time for preparatory procedures. This equipment must be installed in conspicuously marked approved locations.

(c) A survival kit, appropriately equipped for the route to be flown, must be attached to each required life raft.

[Revision note: Based on § 40.206]

§ 121.289 Equipment for operations in icing conditions.

(a) No person may operate an airplane in icing conditions unless it is

equipped with means for the prevention or removal of ice on windshields, wings, empennage, propellers, and other parts of the airplane where ice formation will adversely affect the safety of the airplane.

(b) No person may operate an airplane in icing conditions at night unless means are provided for illuminating or otherwise determining the formation of ice on the parts of the wings that are critical from the standpoint of ice accumulation. Any illuminating that is used must be of a type that will not cause glare or reflection that would handicap crewmembers in the performance of their duties.

[Revision note: Based on § 40.207]

§ 121.291 Flight recorders.

(a) Unless the airplane is equipped with an approved flight recorder that records at least time, altitude, airspeed, vertical acceleration, and heading, no person may operate—

(1) A large airplane that is certificated for operations above 25,000 feet altitude; or

(2) Any large turbine-powered airplane.

(b) When an approved flight recorder is installed, it must be operated continuously from the instant the airplane begins the takeoff roll until it has completed the landing roll at an airport.

(c) Each air carrier shall keep the recorded information for at least 60 days and for a longer period upon the request of the Administrator or the Civil Aeronautics Board for a particular flight or series of flights.

[Revision note: Based on § 40.208]

§ 121.297 Radio equipment.

(a) No person may operate an airplane unless it is equipped with radio equipment required for the kind of operation being conducted.

(b) Where two independent (separate and complete) radio systems are required by §§ 121.299 and 121.301, each system must have an independent antenna installation except that, where rigidly supported nonwire antennas or other antenna installations of equivalent reliability are used, only one antenna is required.

[Revision note: Based on § 40.230]

§ 121.299 Radio equipment for operations under VFR over routes navigated by pilotage.

(a) No person may operate an airplane under VFR over routes that can be navigated by pilotage, unless it is equipped with the radio equipment necessary under normal operating conditions to fulfill the following:

(1) Communicate with at least one appropriate ground station from any point on the route.

(2) Communicate with appropriate traffic control facilities from any point in the control zone within which flights are intended.

(3) Receive meteorological information from any point en route by either of two independent systems. One of the means provided to comply with this subparagraph may be used to comply with subparagraphs (1) and (2) of this paragraph.

(b) No person may operate an airplane at night under VFR over routes that can be navigated by pilotage unless that airplane is equipped with the radio equipment necessary under normal operating conditions to fulfill the functions specified in paragraph (a) of this section and to receive radio navigational signals applicable to the route flown, except that a marker beacon receiver or ILS receiver is not required.

[Revision note: Based on § 40.231]

§ 121.301 Radio equipment for operations under VFR over routes not navigated by pilotage or for operations under IFR or over-the-top.

(a) No person may operate an airplane under VFR over routes that cannot be navigated by pilotage or for operations conducted under IFR or over-the-top, unless the airplane is equipped with that radio equipment necessary under normal operating conditions to fulfill the functions specified in § 121.299(a) and to receive satisfactorily by either of two independent systems, radio navigational signals from all primary en route and approach navigational facilities intended to be used. However, only one marker beacon receiver providing visual and aural signals and one ILS receiver need be provided. Equipment provided to receive signals en route may be used to receive signals on approach, if it is capable of receiving both signals.

(b) In the case of operation over routes on which navigation is based on low frequency radio range or automatic direction finding, only one low frequency radio range or ADF receiver need be installed if the airplane is equipped with two VOR receivers, and VOR navigational aids are so located and the airplane is so fueled that, in the case of failure of the low frequency radio range receiver or ADF receiver, the flight may proceed safely to a suitable airport, by means of VOR aids, and complete an instrument approach by use of the remaining airplane radio system.

(c) Whenever VOR navigational receivers are required by paragraph (a) or (b) of this section, at least one approved distance measuring equipment unit (DME), capable of receiving and indicating distance information from VOR-TAC facilities, must be installed on each airplane when operated within the 48 contiguous States and the District of Columbia at and above 24,000 feet MSL and must be installed on each of the following airplanes, regardless of the altitude flown, when operating within the 48 contiguous States and the District of Columbia after the indicated dates.

(1) Turbojet airplanes—June 30, 1963.

(2) Turboprop airplanes—December 31, 1963.

(3) Pressurized reciprocating engine airplanes—June 30, 1964.

(4) Other large airplanes—June 30, 1965.

(d) If the distance measuring equipment (DME) becomes inoperative en route, the pilot shall notify ATC of that failure as soon as it occurs.

[Revision note: Based on § 40.232]

§ 121.303 Radio equipment for extended overwater operations and for certain other operations.

No person may conduct an extended overwater operation unless the airplane is equipped with the radio equipment necessary to comply with § 121.301 and an independent system that complies with § 121.299(a)(1).

[Revision note: Based on § 40.233]

Subpart I—Maintenance and Preventive Maintenance

§ 121.321 Responsibility for maintenance and preventive maintenance.

Regardless of any arrangements with any other person for performing maintenance, preventive maintenance, and alterations, each air carrier is primarily responsible for the airworthiness of its airplane and required equipment.

[Revision note: Based on § 40.240]

§ 121.323 Maintenance and preventive maintenance requirements.

Each person who is directly in charge of the maintenance or preventive maintenance of any airframe, engine, propeller, or appliance must hold an appropriate airman certificate.

[Revision note: Based on § 40.241 (less (a))]

§ 121.325 Inspection organization.

Each air carrier (or person performing maintenance or preventive maintenance functions for it) shall maintain an adequate inspection organization that is responsible for determining that the workmanship, methods, and material used conform to the applicable regulations of this chapter, with accepted standards and good practices, and that each airframe, engine, propeller, and appliance released to service is airworthy.

[Revision note: Based on § 40.240(a)]

§ 121.327 Maintenance and preventive maintenance training program.

Each air carrier (or person performing maintenance or preventive maintenance functions for it) shall have a training program to insure that all persons who determine the adequacy of work done are fully informed about procedures and techniques and new equipment in use and are competent to perform their duties.

[Revision note: Based on § 40.242]

§ 121.329 Maintenance and preventive maintenance personnel duty time limitation.

Each air carrier (or person performing maintenance or preventive maintenance for it) shall relieve each individual performing maintenance or preventive maintenance from duty for a period of at least 24 consecutive hours during any seven consecutive days, or the equivalent thereof within any one month.

[Revision note: Based on § 40.243]

Subpart J—Airman and Crewmember Requirements

§ 121.341 Airman: limitations on use of services.

(a) No air carrier may use a person as an airman unless that person—

(1) Holds an appropriate current airman certificate issued by the FAA;

(2) Has appropriate current airman and medical certificates in his possession while engaged in operations under this Part; and

(3) Is otherwise qualified for the operation for which he is to be used.

(b) Each airman covered by paragraph (a)(2) of this section shall present either or both certificates for inspection upon the request of the Administrator.

(c) No air carrier may use the services of any person as a pilot on an airplane engaged in operations under this part if that person has reached his 60th birthday. No person may serve as a pilot on an airplane engaged in operations under this part if that person has reached his 60th birthday.

[Revision note: Based on § 40.260]

§ 121.345 Composition of flight crew.

(a) No air carrier may operate an airplane with less than the minimum flight crew approved in the airworthiness certificate or the Airplane Flight Manual approved for that type airplane and required by this part for the kind of operation being conducted.

(b) In any case in which this part requires the performance of two or more functions for which an airman certificate is necessary, that requirement is not satisfied by the performance of multiple functions at the same time by one airman.

(c) If a carrier is authorized to operate under IFR, or if it operates large airplanes, the minimum pilot crew is two pilots and the carrier shall designate one pilot as pilot in command and the other second in command.

(d) On each flight requiring a flight engineer at least one flight crewmember, other than the flight engineer, must be qualified to provide emergency performance of the flight engineer's functions for the safe completion of the flight if the flight engineer becomes ill or is otherwise incapacitated. A pilot need not hold a flight engineer's certificate to perform the flight engineer's functions in such a situation.

[Revision note: Based on § 40.261]

§ 121.347 Flight engineer.

(a) No air carrier may operate an airplane having a maximum certificated takeoff weight of more than 80,000 pounds without a flight crewmember holding a current flight engineer certificate.

(b) Such a flight crewmember is also required on each four-engine airplane having a maximum certificated takeoff weight of more than 30,000 pounds, if the Administrator determines that the design of the airplane or the kind of operation requires a flight engineer for safe operation.

[Revision note: Based on § 40.263]

§ 121.351 Flight attendants.

Each air carrier conducting a passenger operation shall provide at least one flight attendant on each airplane with a capacity of more than nine passengers.

[Revision note: Based on § 40.265]

§ 121.353 Aircraft dispatcher.

Each air carrier shall provide enough qualified aircraft dispatchers at each dispatch center to insure proper operational control of each flight.

[Revision note: Based on § 40.266]

§ 121.355 Emergency and emergency evacuation duties.

(a) Each air carrier shall assign to each required crewmember the necessary functions that he is to perform in an emergency or a situation requiring emergency evacuation. The air carrier shall show that those functions are realistic and can be accomplished.

(b) The air carrier shall describe each required crewmember's functions under paragraph (a) of this section in its air carrier manual.

[Revision note: Based on § 40.267]

Subpart K—Training Program

§ 121.371 Establishment.

(a) Each air carrier shall have an approved training program that assures that each crewmember and each dispatcher is adequately trained to perform his assigned duties. Each crewmember and each dispatcher must satisfactorily complete the initial training phases before serving in operations under this Part.

(b) Each air carrier shall provide adequate ground and flight training facilities and properly qualified instructors for the training required by this section, and enough check airmen to conduct the flight checks required by this part. Each check airman must hold the airman certificates and ratings that are required for the airman being checked.

(c) The training program for each flight crewmember must consist of appropriate ground and flight training, including proper flight crew coordination. The air carrier shall standardize procedures for each flight crew function to the extent that each flight crewmember knows the functions for which he is responsible and the relation of those functions to the functions of other flight crewmembers. The initial program must include at least the requirements set forth in §§ 121.373 through 121.381.

(d) The crewmember emergency procedures training program must include at least the requirements set forth in § 121.381.

(e) Each instructor, supervisor, or check airman that is responsible for a particular training check or flight check shall certify as to the proficiency of the crewmember or dispatcher concerned after he completes his initial training and after he completes his recurrent training. That certification shall be made a part of the crewmember or dispatcher's record.

[Revision note: Combines §§ 40.280, 40.289 (c), and 40.290]

§ 121.373 Ground training: pilots.

(a) Each air carrier shall provide at least the following initial ground training for each pilot:

(1) Instruction in the appropriate provisions of the carrier's operations specifications and of this chapter, especially the operating and dispatching rules and airplane operating limitations.

(2) Flight release procedures and appropriate contents of the manuals.

(3) Duties and responsibilities of crewmembers.

(4) The type of airplane to be flown, including a study of the airplane, engines, major components and systems, performance limitations, standard and emergency operating procedure, and appropriate contents of the approved Airplane Flight Manual.

(5) Principles and methods for determining weight and balance limitations for takeoff and landing.

(6) Navigation and the use of appropriate navigation aids, including instrument approach facilities and procedures that the air carrier is authorized to use.

(7) Airport and airways traffic control systems and procedures, and pertinent ground control letdown procedures.

(8) Enough meteorology to insure a practical knowledge of the principles of icing, fog, thunderstorms, and frontal systems.

(9) Procedures for operating in turbulent air, icing, hail, thunderstorm, and other potentially hazardous meteorological conditions.

(b) Each air carrier shall provide each pilot—

(1) That additional ground training necessary to insure qualifications in new equipment, procedures, or techniques; and

(2) Recurrent ground training and checks at least once every twelve months (a check may be given during the month before or after it is due without affecting its effective date) to insure his continued proficiency in procedures, techniques, and information essential to the satisfactory performance of his duties.

[Revision note: Combines §§ 40.281 and 40.289 (less (c))]

§ 121.375 Flight training: pilots.

(a) The initial flight training that the air carrier must provide for each pilot before he serves as a flight crewmember must include at least—

(1) Takeoffs and landings during day and night in each type of airplane he is to pilot in operations under this Part;

(2) Normal and emergency flight maneuvers in each type of airplane he is to pilot in operations under this Part; and

(3) Flight under simulated instrument conditions.

(b) A pilot qualifying to serve as other than pilot in command or second in command, shall show the Administrator or a check pilot that he is able to take off and land each type of airplane in which he is to serve.

(c) The initial flight training for each pilot qualifying to serve as a pilot in command (or second in command of an airplane in an operation that requires three or more pilots) must include flight instruction and practice in at least the following maneuvers and procedures:

(1) In each type of airplane to be flown by him in operations under this part, he must perform the following:

(i) Takeoffs at the authorized maximum takeoff weight using maximum takeoff power with a simulated failure of the critical engine. In transport category airplanes the simulated failure must be done as close as possible to the critical engine failure speed V_1 and climb-out must be made as close as possible to the takeoff safety speed V_2, and the pilot shall determine the values for V_1 and V_2.

(ii) If a three-engine or four-engine airplane, flight, including maneuvering to a landing at the authorized maximum landing weight, where appropriate, with the most critical combination of two engines inoperative, or operating at zero thrust, using appropriate climb speeds set forth in the Airplane Flight Manuals.

(iii) At the authorized maximum landing weight, simulated pull-out from the landing and approach configuration at a safe altitude with the critical engine inoperative or operating at zero thrust.

(2) Flight must be conducted under simulated IFR conditions using each kind of navigation facility and letdown procedure that is used in normal operations. If a particular kind of facility is not available in the training area, the training may be given in a synthetic trainer.

For the purposes of subparagraph (1) of this paragraph, weight and power combinations less than those specified in subdivisions (i), (ii), and (iii) of that subparagraph may be used if the performance capabilities of this airplane under the specified conditions are simulated.

(d) Initial flight training for each pilot qualifying to serve as second in command of an airplane that requires two pilots must include flight instruction and practice in at least the following maneuvers and procedures:

(1) In each type of airplane to be flown by him in operations under this part, flight training must include—

(i) Assigned flight duties as second in command, including flight emergencies;

(ii) Taxiing;

(iii) Takeoffs and landings;

(iv) Climbs and climbing turns;

(v) Slow flight;

(vi) Approach to stall;

(vii) Engine shutdown and restart;

(viii) Takeoff and landing with simulated engine failure; and

(ix) Flight under simulated IFR conditions, including instrument approach at least down to circling approach minimums and missed approach procedures.

(2) Flight must be conducted under simulated IFR conditions using each kind of navigation facility and letdown procedure that is used in normal operations. Except for those approach procedures for which the lowest minimums are approved, letdown procedures may be given in a synthetic trainer that has the radio equipment and instruments necessary to simulate other navigational and letdown procedures approved for the air carrier.

(e) The air carrier shall give each pilot any additional flight training necessary to insure his qualification for new equipment, procedures, or techniques. At least once each 12 months, as a part of the training program, it shall give him recurrent flight training and checks (a check may be given during the month before or after it is due without affecting its effective date) to insure his continued proficiency with respect to procedures, techniques, and information essential to the satisfactory performance of his duties. If the check of a pilot in command or second in command requires actual flight, satisfactory completion of the applicable proficiency checks required by § 121.397 or 121.403 meets the requirements of this section.

[Revision note: Combines §§ 40.282 and 40.289 (less (c))]

§ 121.379 Flight engineer training.

(a) The training for each flight engineer must include at least the applicable parts of subparagraphs (1) through (5) of § 121.373(a).

(b) Before serving as a flight crewmember, each flight engineer must have enough flight training to be proficient in the duties assigned to him by the air carrier. Except for emergency procedures, the flight training may be given during flights subject to this Part under the supervision of a qualified flight engineer.

(c) The air carrier shall give each flight engineer any additional ground and flight training necessary to assure his qualification for new equipment, procedures, and techniques. At least once each 12 months, as a part of the training program, it shall give him recurrent training to assure his continued proficiency with respect to procedures, techniques, and information essential to the satisfactory performance of his duties. A competence check may be given during the month before or the month after it is due without affecting its effective date.

[Revision note: Combines §§ 40.284 and 40.289 (less (c))]

§ 121.380 Crewmember emergency training.

(a) Each air carrier shall design its initial training in emergency procedures to give each required crewmember appropriate individual instruction in emergency procedures, including assignments in an emergency and coordination among crewmembers and appropriate individual instruction in at least the following subjects, as appropriate to the particular crewmember:

(1) Procedures for handling failure of an engine, engines, or other airplane components or systems.

(2) Procedures for handling—

(i) Emergency decompression;

(ii) Fire in the air or on the ground;

(iii) Ditching; and

(iv) Evacuation.

(3) The location of emergency equipment.

(4) The operation of emergency equipment.

(5) The power setting for maximum endurance and maximum range.

(b) The air carrier shall give each crewmember, at least once each 12 months, recurrent training in the emergency procedures set forth in paragraph (a) of this section.

(c) Synthetic trainers that simulate flight operating emergency conditions may be used for training crewmembers in emergency procedures.

(d) The air carrier shall give instruction to each crewmember performing duties on pressurized airplanes operated above 25,000 feet by lectures and films, or other equivalent means approved after demonstration, covering at least—

(1) Respiration;

(2) Hypoxia;

(3) Duration of consciousness at altitudes without supplemental oxygen;

(4) Gas expansion;

(5) Gas bubble formation; and

(6) Physical phenomena and incidents of decompression.

(e) The air carrier shall give each crewmember performing duties on pressurized airplanes operated above 25,000 feet training and practice in putting on oxygen masks and operating oxygen equipment.

[Revision note: Combines §§ 40.286 and 40.289 (less (c))]

§ 121.381 Aircraft dispatcher training.

(a) Each air carrier shall provide a training program for its aircraft dispatchers that includes—

(1) Training in duties and responsibilities;

(2) Flight operations procedures;

(3) Air traffic control procedures;

(4) Performance of airplanes used;

(5) Navigation aids and facilities; and

(6) Meteorology.

(b) The training program must emphasize emergency procedures, including the alerting of proper governmental, company, and private agencies to give the maximum help to an airplane in distress.

(c) Each aircraft dispatcher shall, before performing duties as an aircraft dispatcher, show the supervisor or ground instructor authorized to certify his proficiency, his knowledge of the following:

(1) Contents of the air carrier operating certificate.

(2) Appropriate provisions of the air carrier's operations specifications, manual, and this chapter.

(3) Characteristics of airplanes used by the carrier.

(4) Cruise control data and cruising speeds for those airplanes.

(5) Maximum authorized airplane loads for the routes and airports used.

(6) Air carrier radio facilities.

(7) Characteristics and limitations of each kind of radio and navigation facility used.

(8) Effect of weather conditions on airplane radio reception.

(9) Airports used and the terrain en route.

(10) Prevailing weather phenomena.

(11) Sources of weather information available.

(12) Pertinent air traffic control procedures.

(13) Emergency procedures.

(d) The air carrier shall give each dispatcher any additional training necessary to assure his qualification for new equipment, procedures, and techniques. At least once each 12 months, as a part of the training program, it shall give

him recurrent training and checks to assure his continued competence with respect to the procedures, techniques, and information essential to his duties.

[Revision note: Combines §§ 40.288 and 40.289 (less (c)).]

Subpart L—Flight Crewmember and Dispatcher Qualification

§ 121.391 General.

(a) No air carrier may use a flight crewmember or dispatcher, and none of its flight crewmembers or dispatchers may perform duties under his airman certificate, unless he meets the appropriate requirements of §§ 121.371 through 121.381 and §§ 121.395 through 121.409.

(b) When a pilot completes a check required by this subpart, the check airman who is responsible for the particular check shall certify as to the pilot's proficiency. This certification shall be made a part of the pilot's record.

(c) If a flight crewmember who is required to take a check takes that check in the calendar month before, or the calendar month after, the month in which it becomes due, he is considered to have taken it during the month it became due.

[Revision note: Based on § 40.300 (a) (1st sentence) and (b).]

§ 121.393 Pilot qualification: certificates required.

(a) No pilot may act as pilot in command of an airplane unless he holds an airline transport pilot certificate and an appropriate type rating for that airplane.

(b) Each pilot who acts as a pilot in a capacity other than a pilot in command must hold at least a commercial pilot certificate and an instrument rating.

[Revision note: Based on § 40.300 (less 1st sentence of (a) and less (b)).]

§ 121.395 Pilot qualification: recent experience.

No air carrier may use a pilot as a pilot in command or second in command in scheduled air transportation unless, within the preceding 90 days, he has made at least three takeoffs and three landings in an airplane of the type in which he is to serve.

[Revision note: Based on § 40.301]

§ 121.397 Pilot checks.

(a) *Line check.* No air carrier may use a pilot as pilot in command of an airplane until he has passed a line check in one of the types of airplanes that he is to fly. Thereafter, he may not serve as a pilot in command unless each 12 months he passes a similar line check. The check must be given by a check pilot who is qualified on both the route and the airplane. The check must consist of at least one flight over a part of a Federal airway, foreign airway, or advisory route over which the pilot may be assigned. During the flight the check pilot shall determine whether the pilot being checked satisfactorily performs the duties and responsibilities of a pilot in command.

(b) *Proficiency check.* No air carrier may use a pilot as a pilot in command of an airplane in operations under this part unless he has satisfactorily shown to the Administrator or a check pilot that he is able to pilot and navigate airplanes that he is to fly. Thereafter he may not serve as a pilot in command unless each six months he passes a similar pilot proficiency check. If a pilot serves in more than one airplane type, at least each alternate check must be given in flight in the largest type of airplane in which he serves. The proficiency check must include the following:

(1) Equipment test (oral or written).
(2) Taxiing.
(3) Runup.
(4) Takeoff.
(5) Climb.
(6) Climbing turns.
(7) Steep turns.
(8) Maneuvers at minimum speeds.
(9) Approaches to stalls.
(10) Propeller feathering.
(11) Maneuvers with one or more engine(s) inoperative.
(12) Rapid descent and pullout.
(13) Radio tuning.
(14) Orientation.
(15) Approach procedures.
(16) Missed approach procedures.
(17) Traffic control procedures.
(18) Crosswind landings.
(19) Landing under circling approach conditions.
(20) Takeoffs and landings with engine(s) failure.
(21) Demonstration of pilot judgment.
(22) Emergency procedures.
(23) Flight maneuvers specified in § 121.375(c)(1), except that the simulated engine failure during takeoff need not be at speed V_1 or at the actual or simulated maximum authorized weight.
(24) Approved flight maneuvers under simulated instrument conditions using the navigation facilities and letdown procedures normally used by the pilot, except that maneuvers other than those associated with approach procedures for which the lowest minimums are approved may be given in a synthetic trainer that contains the radio equipment and instruments necessary to simulate other navigational and letdown procedures approved for the air carrier.

(c) If, in the judgment of the check pilot, the pilot being checked performs any of the items listed in paragraph (b) of this section in an unsatisfactory manner, the check pilot may give additional training to the pilot during the course of the proficiency check. If the pilot being checked is unable to demonstrate satisfactory performance to the check pilot, the air carrier may not use him in operations under this Part until he has satisfactorily shown his proficiency.

(d) Use of flight simulator. After the first proficiency check, the satisfactory completion of an approved training course in an approved airplane simulator may be substituted at alternate six-month intervals for the proficiency check required by paragraph (b) of this section, if the simulator meets the requirements of Appendix C of this part and—

(1) The simulator is maintained at the same level as required for initial approval;
(2) A functional preflight check of the simulator is performed each day before beginning simulator flight training or proficiency checks;
(3) A daily discrepancy log is kept and an entry of each discrepancy is made by the simulator instructor or check airman before the end of each training or check flight; and
(4) If a modification is made to the airplane, a corresponding modification is made to the simulator if necessary for flight crew training or proficiency checks.

The simulator may be used with inoperative instruments or equipment, if they are not applicable to the particular phase of training being given.

(d) Before serving as a pilot in command on any airplane, the pilot must have passed, during the preceding 12 months, either a proficiency check or a line check in that type of airplane.

[Revision note: Based on § 40.302]

§ 121.399 Pilot in command qualification: routes and airports.

(a) No air carrier may use a pilot as pilot in command until he has qualified, for the route on which he is to serve, in accordance with this section, and the appropriate instructor or check pilot has so certified.

(b) The qualifying pilot shall show that he has adequate knowledge of the following with respect to each route he is to fly:

(1) Weather characteristics.
(2) Navigation facilities.
(3) Communication procedures.
(4) Kinds of terrain and obstruction hazards.
(5) Minimum safe flight levels.
(6) Position reporting points.
(7) Holding procedures.
(8) Pertinent air traffic control procedures.
(9) Congested areas, obstructions, physical layout, and instrument approach procedures of each regular, provisional, or refueling airport that is approved for the route.

Those parts of the above requirements relating to holding procedures and instrument approach procedures may be accomplished in a synthetic trainer that contains the radio equipment and instruments necessary to simulate the navigation and letdown procedures approved for the air carrier.

(c) The qualifying pilot shall make an entry as a member of a flight crew at each regular, provisional, and refueling airport into which he is scheduled to fly. The entry must include a landing and a takeoff. The qualifying pilot must occupy a seat in the pilot compartment and must be accompanied by a pilot who is qualified for the airport.

(d) Paragraph (c) of this section does not apply if—

(1) The initial entry is made under VFR weather conditions at the airport involved;

(2) The air carrier shows that the qualification can be made by using approved pictorial means; or

(3) The air carrier notifies the Administrator that it intends to operate at an airport that is near an airport into which the pilot concerned is currently qualified by entry, and the Administrator finds that the pilot is adequately qualified at the new airport, considering at least the pilot's familiarity with the layout, surrounding terrain, location of obstacles, and instrument approach and traffic control procedures at the new airport.

(e) No pilot in command may serve on a route or route segment on which he must navigate by pilotage and fly at or below the level of terrain that is within 25 miles horizontally of the centerline of that route or route segment unless he has made at least two one-way trips over the route or route segment on the flight deck under VFR weather conditions.

[Revision note: Based on § 40.303]

§ 121.401 Pilot route and airport qualifications for particular trips.

(a) An air carrier may not use a pilot as pilot in command unless, within the preceding 12 months, the pilot has made at least one trip as pilot or other member of a flight crew between terminals into which he is scheduled to fly and has complied with § 121.399(e), if applicable.

(b) To re-establish route and airport qualification after being absent from the route for a period of more than 12 months, a pilot must comply with the appropriate provisions of § 121.399.

[Revision note: Based on § 40.304]

§ 121.403 Proficiency checks: second in command.

(a) An air carrier may not use a pilot as second in command unless he has satisfactorily shown to the Administrator or a check pilot that he is able to pilot and navigate airplanes that he is to fly and to perform his assigned duties. Thereafter, he may not serve as second in command unless each 12 months he satisfactorily completes a similar pilot proficiency check.

(b) If a pilot serves in more than one airplane type, at least each alternate check must be given in flight in the largest type of airplane in which he serves.

(c) The proficiency check must include at least an oral or written equipment test and the procedures and flight maneuvers specified in § 121.375(d)(1). The check may be given from either the right or left pilot seat.

(d) After the initial check, satisfactory completion of an approved course of training in an aircraft simulator that meets the requirements of § 121.397(d) may be substituted at alternate 12-month intervals for the checks required by paragraph (a) of this section. In addition, satisfactory completion of the proficiency check in accordance with § 121.375 (b) and (c) meets the requirements of this section.

[Revision note: Based on § 40.305]

§ 121.407 Flight engineer qualification.

(a) No air carrier may use a flight engineer unless, within the preceding six-month period, he has had at least 50 hours of flight time as a flight engineer on the type of airplane in which he is to serve, or the air carrier or the Administrator has checked him (in a flight in other than scheduled air transportation) and has determined that he is familiar with all essential current information and operating procedures for the type of airplane to which he is assigned and is competent in that airplane.

(b) If a flight engineer has been previously qualified in the type of airplane in which he is to serve, the air carrier may give the check in an approved synthetic trainer in place of the flight check.

[Revision note: Based on § 40.307]

§ 121.409 Aircraft dispatcher qualification.

(a) No air carrier may use a dispatcher to dispatch airplanes over any route or route segment unless the air carrier has determined that he is familiar with all essential operating procedures for the entire route and the airplane to be used. However, a dispatcher who is qualified to dispatch airplanes over part of a route may dispatch airplanes after coordinating with dispatchers who are qualified to dispatch airplanes over the other parts of the route.

(b) No aircraft dispatcher may dispatch airplanes over any area in which he is authorized to exercise dispatch jurisdiction unless within the preceding 12 months, he has made at least one round trip over that area on the flight deck of an airplane. The trip must include entry into as many points as practicable; it is not necessary to make a flight over each route in the area.

[Revision note: Based on § 40.310]

Subpart M—Flight Time Limitations

§ 121.421 Flight time limitations: all flight crewmembers.

(a) No air carrier may schedule any flight crewmember for duty aloft in scheduled air transportation or in other commercial flying if that crewmember's total flight time in all commercial flying will exceed:

(1) 1,000 hours in any year.

(2) 100 hours in any month.

(3) 30 hours in any seven consecutive days.

(b) No air carrier may schedule a flight crewmember for duty aloft for more than eight hours during any 24 consecutive hours without a rest period at or before the end of that eight hours, equal to twice the number of hours of duty aloft since the last rest period, but not less that eight hours.

(c) Each flight crewmember who has been on duty aloft for more than eight hours during any 24 consecutive hours must be given, upon completion of his assigned flight or series of flights, at least 16 hours of rest before being assigned to any duty with the air carrier.

(d) Each air carrier shall relieve each flight crewmember from all duty for at least 24 consecutive hours at least once during any seven consecutive days.

(e) No air carrier may assign any flight crewmember to any duty with the carrier during any required rest period.

(f) Time spent in transportation, not local in character, that an air carrier requires of a flight crewmember and provides to transport the crewmember to an airport at which he is to serve on a flight as a crewmember, or from an airport at which he was relieved from duty to return to his home station, is not considered part of a rest period.

(g) A flight crewmember is not considered to be scheduled for duty in excess of flight time limitations if the flights to which he is assigned are scheduled and normally terminate within the limitations, but due to circumstances beyond the control of the carrier (such as adverse weather conditions), are not at the time of departure expected to reach their destination within the scheduled time.

[Revision note: Based on § 40.320]

Subpart N—Duty Time Limitations: Aircraft Dispatchers

§ 121.441 General.

(a) Each air carrier shall establish the daily duty period for a dispatcher so that it begins at a time that allows him to become thoroughly familiar with existing and anticipated weather conditions along the route before he dispatches any airplane. He shall remain on duty until each airplane dispatched by him has completed its flight or has gone beyond his jurisdiction, or until he is relieved by another qualified dispatcher.

(b) Except in cases where circumstances or emergency conditions beyond the control of the air carrier require otherwise—

(1) No air carrier may schedule a dispatcher for more than 10 consecutive hours of duty;

(2) If a dispatcher is scheduled for more than 10 hours of duty in 24 consecutive hours, the carrier shall provide him a rest period of at least eight hours at or before the end of 10 hours of duty; and

(3) Each dispatcher must be relieved of all duty with the air carrier for at least 24 consecutive hours during any seven consecutive days or the equivalent thereof within any month.

[Revision note: Based on § 40.340]

Subpart O—Flight Operations

§ 121.451 Responsibility for operational control.

(a) Each air carrier is responsible for operational control.

(b) The pilot in command and the aircraft dispatcher are jointly responsible for the preflight planning, delay, and dispatch release of a flight in compliance with this chapter and operations specifications.

(c) The aircraft dispatcher is responsible for—

(1) Monitoring the progress of each flight;

(2) Issuing necessary information for the safety of the flight; and

(3) Cancelling or redispatching a flight if, in his opinion or the opinion of the pilot in command, the flight cannot operate or continue to operate safely as planned or released.

(d) Each pilot in command of an airplane is, during flight time, in command of the airplane and crew and is respon-

sible for the safety of the passengers, crewmembers, cargo, and airplane.

[Revision note: Based on § 40.351]

§ 121.453 Operations notices.

Each air carrier shall notify its appropriate operations personnel of each change in equipment and operating procedures, including each known change in the use of navigation aids, airports, air traffic control procedures and regulations, local airport traffic control rules, and known hazards to flight, including icing and other potentially hazardous meteorological conditions and irregularities in ground and navigation facilities.

[Revision note: Based on § 40.352]

§ 121.455 Operations schedules.

In establishing flight operations schedules, each air carrier shall allow enough time for the proper servicing of airplanes with fuel and oil at intermediate stops, and shall consider the prevailing winds en route and the cruising speed of the type of airplane used. This cruising speed may not be more than that resulting from the specified cruising output of the engines.

[Revision note: Based on § 40.353]

§ 121.456 Flight crewmembers at controls.

Each required flight crewmember on flight deck duty shall remain at his station while the airplane is taking off or landing, and while it is en route, except when the absence of one member is necessary for the performance of duties in connection with operating the airplane. Each flight crewmember shall keep his seat belt fastened when at his station.

[Revision note: Based on § 40.354]

§ 121.457 Manipulation of controls.

No person may manipulate the flight controls of an airplane during flight unless he is—

(a) A qualified pilot employed by the air carrier operating that airplane.

(b) An authorized pilot safety representative of the Administrator or of the Civil Aeronautics Board who has the permission of the pilot in command, is qualified in the airplane, and is checking flight operations; or

(c) A pilot employed by another air carrier who has the permission of the pilot in command, is qualified in the airplane, and is authorized by the air carrier operating the airplane.

[Revision note: Based on § 40.355]

§ 121.459 Admission to flight deck.

(a) No person may admit any person to the flight deck of an airplane unless the person being admitted is—

(1) A crewmember;

(2) An FAA air carrier inspector, or an authorized representative of the Civil Aeronautics Board, who is performing official duties;

(3) An employee of the United States, an air carrier, or an aeronautical enterprise who has the permission of the pilot in command and whose duties are such that admission to the flight deck is necessary or advantageous for safe operations; or

(4) Any person who has the permission of the pilot in command and is specifically authorized by the air carrier or commercial operator management and by the Administrator.

Subparagraph (2) of this paragraph does not limit the emergency authority of the pilot in command to exclude any person from the flight deck in the interests of safety.

(b) For the purposes of paragraph (a)(3) of this section, employees of the United States who deal responsibly with matters relating to safety and employees of the air carrier whose efficiency would be increased by familiarity with flight conditions, may be admitted by the air carrier. However, the carrier may not admit employees of traffic, sales, or other departments that are not directly related to flight operations, unless they are eligible under paragraph (a)(4) of this section.

(c) No person may admit any person to the flight deck unless there is a seat available for his use in the passenger compartment, except—

(1) An FAA air carrier inspector or an authorized representative of the Administrator or Civil Aeronautics Board who is checking or observing flight operations;

(2) An air traffic controller who is authorized by the Administrator to observe ATC procedures;

(3) A certificated airman employed by the air carrier whose duties require an airman certificate;

(4) A certificated airman employed by another air carrier whose duties with that carrier require an airman certificate and who is authorized by the carrier operating the airplane to make specific trips over a route;

(5) An employee of the air carrier operating the airplane whose duty is directly related to the conduct or planning of flight operations or the in-flight monitoring of aircraft equipment or operating procedures, if his presence on the flight deck is necessary to perform his duties and he has been authorized in writing by a responsible supervisor, listed in the Operations Manual as having that authority; and

(6) A technical representative of the manufacturer of the airplane or its components whose duties are directly related to the in-flight monitoring of aircraft equipment or operating procedures, if his presence on the flight deck is necessary to perform his duties, and he has been authorized in writing by the Administrator and by a responsible supervisor of the operations department of the air carrier, listed in the Operations Manual as having that authority.

[Revision note: Based on § 40.356]

§ 121.461 Flying equipment.

(a) The pilot in command shall insure that appropriate aeronautical charts containing adequate information concerning navigation aids and instrument approach procedures are aboard the airplane for each flight.

(b) Each crewmember shall, on each flight, have readily available for his use a flashlight that is in good working order.

[Revision note: Based on § 40.357]

§ 121.463 Restriction or suspension of operation.

When an air carrier knows of conditions, including airport and runway conditions, that are a hazard to safe operations, it shall restrict or suspend operations until those conditions are corrected.

[Revision note: Based on § 40.358]

§ 121.465 Compliance with approved routes and limitations.

No pilot may operate an airplane in scheduled air transportation—

(a) Over any route or route segment unless it is specified in the air carrier's operations specifications; or

(b) Other than in accordance with the limitations in the operations specifications.

[Revision note: Based on § 40.359]

§ 121.467 Emergencies.

(a) In an emergency situation that requires immediate decision and action the pilot in command may take any action that he considers necessary under the circumstances. In such a case he may deviate from prescribed operations procedures and methods, weather minimums, and this chapter, to the extent required in the interests of safety.

(b) In an emergency situation arising during flight that requires immediate decision and action by an aircraft dispatcher, and that is known to him, the aircraft dispatcher shall advise the pilot in command of the emergency, shall ascertain the decision of the pilot in command, and shall have the decision recorded. If the aircraft dispatcher cannot communicate with the pilot, he shall declare an emergency and take any action that he considers necessary under the circumstances.

(c) Whenever a pilot in command or dispatcher exercises emergency authority, he shall keep the appropriate ATC facility and dispatch centers fully informed of the progress of the flight. The person declaring the emergency shall send a written report of any deviation, through the air carrier's operations manager, to the Administrator. A dispatcher shall send his report within 10 days after the date of the emergency, and a pilot in command shall send his report within 10 days after returning to his home base.

[Revision note: Based on § 40.360]

§ 121.469 Reporting potentially hazardous meteorological conditions and irregularities of ground and navigation facilities.

(a) Whenever he encounters a meteorological condition or an irregularity in a ground or navigational facility, in flight, the knowledge of which he considers essential to the safety of other flights, the pilot in command shall notify an appropriate ground station as soon as practicable.

(b) The ground radio station that is notified under paragraph (a) of this sec-

tion shall report the information to the appropriate agency of the United States.

[Revision note: Based on § 40.361]

§ 121.471 Reporting mechanical irregularities.

The pilot in command shall enter or have entered in the maintenance log of the airplane each mechanical irregularity that comes to his attention during flight time. Before each flight, he shall ascertain the status of each irregularity entered in the log at the end of the preceding flight.

[Revision note: Based on § 40.362]

§ 121.473 Engine inoperative; landing; reporting.

(a) Except as provided in paragraph (b) of this section, whenever an engine of an airplane fails or whenever the rotation of an engine is stopped to prevent possible damage, the pilot in command shall land the airplane at the nearest suitable airport, in point of time, at which a safe landing can be made.

(b) If not more than one engine of an airplane that has three or more engines fails or its rotation is stopped, the pilot in command may proceed to an airport that he selects if, after considering the following, he decides that proceeding to that airport is as safe as landing at the nearest suitable airport:

(1) The nature of the malfunction and the possible mechanical difficulties that may occur if flight is continued.

(2) The altitude, weight, and usable fuel at the time of engine stoppage.

(3) The weather conditions en route and at possible landing points.

(4) The air traffic congestion.

(5) The kind of terrain.

(6) His familiarity with the airport to be used.

(c) The pilot in command shall report each stoppage of engine rotation in flight to the appropriate ground radio station as soon as practicable and shall keep that station fully informed of the progress of the flight.

(d) If the pilot in command lands at an airport other than the nearest suitable airport, in point of time, he shall (upon completing the trip) send a written report, in duplicate, to his operations manager, stating his reasons for determining that his selection of an airport, other than the nearest airport, was as safe a course of action as landing at the nearest suitable airport. The operations manager shall, within 10 days after the pilot returns to his home base, send a copy of this report with his comments to the FAA Air Carrier District Office charged with the overall inspection of the air carrier's operations.

[Revision note: Based on § 40.363]

§ 121.475 Instrument approach procedures and IFR landing minimums.

No person may make an instrument approach at an airport except in accordance with IFR weather minimums and instrument approach procedures set forth in the air carrier's operations specifications.

[Revision note: Based on § 40.364]

§ 121.477 Equipment interchange.

(a) Before operating under an interchange agreement, each air carrier shall show that—

(1) The procedures for the interchange operation conform with this chapter and with safe operating practices;

(2) Required crewmembers and dispatchers meet approved training requirements for the airplanes and equipment to be used and are familiar with the communications and dispatch procedures to be used;

(3) Maintenance personnel meet training requirements for the airplanes and equipment, and are familiar with the maintenance procedures to be used;

(4) Flight crewmembers and dispatchers meet appropriate route and airport qualifications; and

(5) The airplanes to be operated are essentially similar to the airplanes of the carrier with whom the interchange is effected with respect to the arrangement of flight instruments and the arrangement and motion of controls that are critical to safety unless the Administrator determines that the air carrier has adequate training programs to insure that any potentially hazardous dissimilarities are safely overcome by flight crew familiarization.

(b) Each air carrier shall include the pertinent provisions and procedures involved in the equipment interchange agreement in its manuals.

[Revision note: Based on § 40.365]

§ 121.479 Briefing passengers: extended overwater flights.

(a) Each air carrier operating an airplane in extended overwater operations shall insure that all passengers are orally briefed on—

(1) The location and operation of emergency exits;

(2) The location and operation of life preservers, including a demonstration of donning and inflating a life preserver; and

(3) The location of life rafts.

(b) The air carrier shall describe the procedure to be followed in the briefing in its manual.

(c) If the airplane proceeds directly over water after takeoff, the briefing on locations of life preservers and emergency exits must be done before takeoff, and the rest of the briefing must be done as soon as practicable after takeoff.

(d) If the airplane does not proceed directly over water after takeoff, no part of the briefing has to be given before takeoff but the entire briefing must be given before reaching the over water part of the flight.

[Revision note: Based on § 40.370]

§ 121.481 Alcoholic beverages.

(a) No person may drink any alcoholic beverage aboard an airplane unless the air carrier operating the airplane has served that beverage to him.

(b) No air carrier may serve any alcoholic beverage to any person aboard any of its airplanes if that person appears to be intoxicated.

(c) No air carrier may allow any person to board any of its airplanes if that person appears to be intoxicated.

(d) Each air carrier shall, within five days after the incident, report to the Administrator the refusal of any person to comply with paragraph (a) of this section, or of any disturbance caused by a person who appears to be intoxicated aboard any of its airplanes.

[Revision note: Based on § 40.371]

§ 121.483 Minimum altitudes for use of automatic pilot.

(a) *En route operations.* Except as provided in paragraph (b) of this section, no person may use an automatic pilot en route, including climb and descent, at an altitude above the terrain that is less than twice the maximum altitude loss specified in the Airplane Flight Manual for a malfunction of the automatic pilot under cruise conditions, or less than 500 feet, whichever is higher.

(b) *Approaches.* When using an instrument approach facility, no person may use an automatic pilot at an altitude above the terrain that is less than twice the maximum altitude loss specified in the Airplane Flight Manual for a malfunction of the automatic pilot under approach conditions, or less than 50 feet below the approved minimum ceiling for the facility, whichever is higher, except—

(1) When reported weather conditions are less than the basic VFR weather conditions in § 91.105 of this chapter, no person may use an automatic pilot with an approach coupler for ILS approaches at an altitude above the terrain that is less than 50 feet higher than the maximum altitude loss specified in the Airplane Flight Manual for the malfunction of the automatic pilot with approach coupler under approach conditions; and

(2) When reported weather conditions are equal to or better than the basic VFR minimums in § 91.105 of this chapter, no person may use an automatic pilot with an approach coupler for ILS approaches at an altitude above the terrain that is less than the maximum altitude loss specified in the Airplane Flight Manual for the malfunction of the automatic pilot with approach coupler under approach conditions, or 50 feet, whichever is higher.

[Revision note: Based on § 40.372]

§ 121.485 Forward observer's seat; en route inspections.

(a) Each air carrier shall make available a seat on the flight deck of each airplane, used by it in air transportation, for occupancy by the Administrator while conducting en route inspections. The location and equipment of the seat, with respect to its suitability for use in conducting en route inspections, is determined by the Administrator.

(b) In each airplane that has more than one observer's seat, in addition to the seats required for the crew complement for which the aircraft was certificated, the forward observer's seat must be made available to the Administrator.

[Revision note: Based on SR 440]

Subpart P—Dispatching Rules

§ 121.501 Dispatching authority.

Except when an airplane lands at an intermediate airport specified in the original dispatch release and remains there for not more than one hour, no person may start a flight unless an aircraft dispatcher specifically authorizes that flight.

[Revision note: Based on § 40.381]

§ 121.503 Familiarity with weather conditions.

No dispatcher may release a flight unless he is thoroughly familiar with reported and forecast weather conditions on the route to be flown.

[Revision note: Based on § 40.382]

§ 121.505 Dispatcher information to pilot in command.

(a) Before releasing a flight, the dispatcher shall give the pilot in command all available current reports or information on airport conditions and irregularities of navigation facilities that may affect the safety of the flight.

(b) During a flight, the dispatcher shall give the pilot in command any additional available information of meteorological conditions and irregularities of facilities and services that may affect the safety of the flight.

[Revision note: Based on § 40.383]

§ 121.507 Airplane equipment.

No person may dispatch an airplane unless it is airworthy and is equipped as prescribed in § 121.251.

[Revision note: Based on § 40.384]

§ 121.509 Communication and navigation facilities.

No person may dispatch an airplane over an approved route or route segment unless the communication and navigation facilities required by §§ 121.47 and 121.51 for the approval of that route or segment are in satisfactory operating condition.

[Revision note: Based on § 40.385]

§ 121.511 Dispatching under VFR.

No person may dispatch an airplane for VFR operation unless the ceiling and visibility en route, as indicated by available weather reports or forecasts, or any combination thereof, are and will remain at or above applicable VFR minimums until the airplane arrives at the airport or airports specified in the dispatch release.

[Revision note: Based on § 40.386]

§ 121.513 Dispatching under IFR or over-the-top.

No person may dispatch an airplane under IFR, or over-the-top, unless appropriate weather reports or forecasts, or any combination thereof, indicate that the ceilings and visibilities will be at the authorized minimums at the estimated time of arrival at the airport or airports to which dispatched.

[Revision note: Based on § 40.387]

§ 121.515 Alternate airport for departure.

(a) If the weather conditions at the airport of takeoff are below the landing minimums in the air carrier's operations specifications for that airport, no person may dispatch an airplane from that airport unless the dispatch release specifies an alternate airport located within the following distances from the airport of takeoff.

(1) *Airplanes having two engines.* Not more than one hour from the departure airport at normal cruising speed in still air with one engine inoperative.

(2) *Airplanes having three or more engines.* Not more than two hours from the departure airport at normal cruising speed in still air with one engine inoperative.

(b) For the purpose of paragraph (a) of this section, the alternative airport weather conditions must meet the requirements of §121.519.

(c) No person may dispatch an airplane from an airport unless he lists each required alternate airport in the dispatch release.

[Revision note: Based on § 40.388]

§ 121.517 Alternate airport for destination: IFR or over-the-top.

(a) No person may dispatch an airplane under IFR or over-the-top unless he lists at least one alternate airport for each destination airport in the dispatch release. When the weather conditions forecast for the destination and first alternate airport are marginal at least one additional alternate must be designated. However, no alternate airport is required if—

(1) For at least two hours before and two hours after the estimated time of arrival, the ceiling at the airport to which the flight is dispatched is forecast to be at least 1,000 feet above the minimum initial approach altitude to that airport; and

(2) The visibility at that airport is forecast to be at least 3 miles.

(b) For the purposes of paragraph (a) of this section, the weather conditions at the alternate airport must meet the requirements of § 121.519.

(c) No person may dispatch a flight unless he lists each required alternate airport in the dispatch release.

[Revision note: Based on § 40.389]

§ 121.519 Alternate airport weather minimums.

No person may list an airpoirt as an alternate airport in the dispatch release unless the appropriate weather reports or forecasts, or any combination thereof, indicate that the ceilings and visibilities will be at or above the alternate weather minimums specified in the air carrier's operations specifications for that airport when the flight arrives.

[Revision note: Based on §40.390]

§ 121.521 Continuing flight in unsafe conditions.

(a) No person may allow a flight to continue toward any airport to which it has been dispatched if, in the opinion of the pilot in command or dispatcher, the flight cannot be completed safely, unless, in the opinion of the pilot in command, there is no safer procedure. In that event, continuation toward that airport is an emergency situation as set forth in § 121.467.

(b) If any instrument or item of equipment required under this chapter for the particular operation becomes inoperative en route, the pilot in command shall comply with the approved procedures for such an occurrence as specified in the air carrier's manual.

(c) Procedures for continuing flight beyond a terminal point with equipment required in § 121.251(d) inoperative may be included in the air carrier's manual if the Administrator finds that, in a particular situation literal compliance with those equipment requirements is not necessary in the interests of safety.

[Revision note: Based on § 40.391]

§ 121.523 Operation in icing conditions.

(a) No person may dispatch an airplane, continue to operate an airplane en route, or land an airplane when in the opinion of the pilot in command or dispatcher, icing conditions are expected or met that might adversely affect the safety of the flight.

(b) No person may takeoff an airplane when frost, snow, or ice is adhering to the wings, control surfaces, or propellers of the airplane.

[Revision note: Based on § 40.392]

§ 121.525 Original dispatch, redispatch or amendment of dispatch release.

(a) An air carrier may specify any regular, provisional, or refueling airport, authorized for the type of airplane, as a destination for the purpose of original dispatch.

(b) No person may allow a flight to continue to an airport to which it has been dispatched unless the weather conditions at an alternate airport that was specified in the dispatch release are forecast to be at or above the alternate minimums specified in the operations specifications for that airport at the time the airplane would arrive at the alternate airport. However, the disptach release may be amended en route to include any alternate airport that is within the fuel range of the airplane as specified in §§ 121.531 through 121.535.

(c) No person may change an original destination or alternate airport that is specified in the original dispatch to another airport while the airplane is en route unless the other airport is safe for that type of airplane and meets the requirements of §§ 121.501 through 121.541 and 121.111 at the time of redispatch.

(d) Each person who amends a dispatch or flight release en route shall record that amendment.

[Revision note: Based on § 40.393]

§ 121.527 Dispatch to and from provisional airports.

(a) No person may dispatch an airplane to a provisional airport unless that airport meets the requirements of this part applicable to regular airports.

(b) No person may dispatch an airplane from a provisional airport except in accordance with the requirements of this part applicable to dispatch from regular airports.

[Revision note: Based on § 40.394]

§ 121.529 Takeoffs from unlisted and alternate airports.

(a) No pilot may take off an airplane from an airport that is not listed in the operations specifications unless—

(1) The airport and related facilities are adequate for the operation of the airplane;

(2) He can comply with the applicable airplane operating limitations;

(3) The airplane has been dispatched according to dispatching rules applicable to operation from an approved airport; and

(4) The ceiling and visibility at that airport are equal to or better than the following:

(i) *Airports in the United States.* The ceiling and visibility minimums for takeoff prescribed in § 91.117, but not less than 300–1, whichever is higher; or where minimums are not prescribed for the airport, 800–2, 900–1½, or 1,000–1.

(ii) *Airports outside the United States.* The ceiling and visibility minimums for takeoff prescribed or approved by the government of the country in which the airport is located, but not less than 300–1; or where minimums are not prescribed or approved for the airport, 800–2, 900–1½, or 1,000–1.

(b) No pilot may take off from an alternate airport unless the ceiling and visibility are at least equal to the minimums prescribed in the air carrier's operations specifications for alternate airports.

[Revision note: Based on § 40.395]

§ 121.531 Fuel supply; all operations.

No person may dispatch or take off an airplane unless it has enough fuel—

(a) To fly to the airport to which it is dispatched;

(b) Thereafter, to fly to and land at the most distant alternate airport (where required) for the airport to which dispatched; and

(c) Thereafter, to fly for 45 minutes at normal cruising fuel consumption.

[Revision note: Based on § 40.396]

§ 121.533 Factors for computing fuel required.

Each person computing fuel required for the purposes of this subpart shall take into account the following:

(a) Wind and other weather conditions forecast.

(b) Anticipated traffic delays.

(c) One instrument approach and possible missed approach at destination.

(d) Any other conditions that may delay landing of the airplane.

For the purposes of this section, required fuel is in addition to unusable fuel.

[Revision note: Based on § 40.397]

§ 121.535 Takeoff and landing weather minimums: IFR.

(a) Except as provided in paragraph (c) of this section, regardless of any clearance from ATC, no pilot may takeoff or land an airplane under VFR when the reported ceiling or visibility is less than that specified in Part 91 [New] of this chapter or that listed in the air carrier's operations specifications for that airport.

(b) Where a local surface restriction to visibility exists (e.g., smoke, dust, blowing snow or sand) the visibility for day and night operations may be reduced to ½ mile, if all turns after takeoff and prior to landing, and all flight beyond one mile from the airport boundary can be accomplished above or outside the restricted area.

[Revision note: Based on § 40.405]

§ 121.537 Takeoff and landing weather minimums: IFR.

(a) Except as provided in paragraphs (c) and (d) of this section, regardless of any clearance from ATC, no pilot may take off an airplane under IFR if the ceiling or ground visibility reported by the U.S. Weather Bureau or a source approved by the Weather Bureau is less than that specified for the takeoff airport in § 91.117, Part 97 [New] of this chapter, or in the air carrier's operations specifications for the airport.

(b) Except as provided in paragraphs (c) and (d) of this section, no pilot may execute an instrument approach procedure or land under IFR at an airport if the latest U.S. Weather Bureau Report or a source approved by the Weather Bureau for that airport indicates that the ceiling or visibility is less than that prescribed by the Administrator for landing at that airport.

(c) A pilot may execute an instrument approach procedure if the U.S. Weather Bureau report or a source approved by the Weather Bureau indicates that the ceiling or visibility is less than the approved minimum for landing, if the airport is served by operative ILS and PAR and both are used by the pilot. Thereafter, the pilot may land if the pilot in command finds, upon reaching the authorized minimum landing altitude, that actual weather conditions are at least equal to the prescribed minimums.

(d) If a pilot initiates an instrument approach procedure when the current U.S. Weather Bureau report or a source approved by the Weather Bureau indicates that the prescribed ceiling and visibility minimums exist, and a later weather report indicating below minimum conditions is received after the airplane—

(1) Is on an ILS final approach and has passed the outer marker;

(2) Is on final approach using a radio range station or comparable facility, has passed the appropriate facility, and has reached the authorized minimum landing altitude; or

(3) Is on GCA final approach and has been turned over to the final approach controller;

the approach may be continued and a landing may be made, if the pilot in command finds, upon reaching the authorized landing minimum landing altitude, that actual weather conditions are at least equal to the prescribed minimums.

(e) If the pilot in command of an airplane has not served 100 hours as pilot in command in air carrier or commercial operations in the type of airplane he is operating, the ceiling and visibility landing minimums in the air carrier operations specifications for regular, provisional, or refueling airports are increased by 100 feet and one-half mile, respectively. The ceiling and visibility minimums need not be increased above those applicable to the airport when used as an alternate airport. The sliding scale when authorized in the operations specifications does not apply until the pilot in command has served 100 hours as pilot in command in air carrier or commercial operations in the type of airplane he is operating.

[Revision note: Based on § 40.406]

§ 121.539 Applicability of reported weather minimums.

In conducting operations under §§ 121.535 and 121.537, the ceiling and visibility values in the main body of the latest weather report control for VFR and IFR takeoffs and landings and for instrument approach procedures on all runways of an airport. However, if the latest weather report, including an oral report from the control tower, contains a visibility value specified as runway visibility for a particular runway of an airport, that specified value controls for VFR and IFR landings and takeoffs and straight-in instrument approaches for that runway.

[Revision note: Based on § 40.407]

§ 121.541 Flight altitude rules.

(a) *General.* No person may operate an airplane below the minimums set forth in § 91.79 and in addition, in paragraphs (b) and (c) of this section, except when necessary for takeoff or landing, or except when, after considering the character of the terrain, the quality and quantity of meteorological services, the navigational facilities available, and other flight conditions, the Administrator prescribes other minimums for any route or part of a route where he finds that the safe conduct of the flight requires other altitudes and except when allowed under paragraph (d) of this section.

(b) *Day VFR passenger operations.* No person may operate a passenger-carrying airplane under VFR during the day at an altitude less than 1,000 feet above the surface or less than 1,000 feet from any mountain, hill, or other obstruction to flight.

(c) *Night VFR, IFR, and over-the-top operations.* No person may operate an airplane under IFR including over-the-top or at night under VFR conditions at an altitude less than 1,000 feet above the highest obstacle within a horizontal distance of five miles from the center of the intended course, or, in designated mountainous areas, less than 2,000 feet above the highest obstacle within a horizontal distance of five miles from the center of the intended course. However, any person operating an airplane under VFR at night in designated mountainous areas may operate over an approved lighted airway at a minimum altitude of 1,000 feet above such an obstacle.

(d) *Day over-the-top operations below MEA.* Day over-the-top operations may be conducted at flight altitudes below the minimum en route IFR altitudes if—

(1) The operation is conducted at least 1,000 feet above the top of the lower broken or overcast cloud cover;

(2) The top of the lower cloud cover is generally uniform and level;

(3) Flight visibility is at least five miles; and

(4) The base of any higher broken or overcast cloud cover is generally uniform and level and is at least 1,000 feet above the minimum en route IFR altitude for that route segment.

[Revision note: Based on § 40.408]

§ 121.543 Initial approach altitude.

(a) Except as provided in paragraph (b) of this section, when making an initial approach to a radio navigation facility under IFR, no person may descend an airplane below the pertinent minimum altitude for initial approach (as specified in the instrument approach procedure for that facility) until his arrival over that facility has been definitely established.

(b) When making an initial approach on a flight being conducted under § 121.541(d), no pilot may commence an instrument approach until his arrival over the radio facility has definitely been established. In making an instrument approach under these circumstances no person may descend an airplane lower than 1,000 feet above the top of the lower cloud or the minimum altitude determined by the Administrator for that part of the IFR approach, whichever is lower.

[Revision note: Based on § 40.409]

§ 121.545 Responsibility for dispatch release.

Each air carrier shall prepare a dispatch release for each flight between specified points, based on information furnished by an authorized aircraft dispatcher. The pilot in command and an authorized aircraft dispatcher shall sign the release only if they both believe that the flight can be made with safety. The aircraft dispatcher may delegate authority to sign a release for a particular flight, but he may not delegate his authority to dispatch.

[Revision note: Based on § 40.411]

§ 121.547 Load manifest.

Each air carrier is responsible for the preparation and accuracy of a load manifest form before each takeoff. The form must be prepared and signed for each flight by employees of the air carrier who have the duty of supervising the loading of airplanes and preparing the load manifest forms or by other qualified persons authorized by the air carrier.

[Revision note: Combines §§ 40.412 and 40.504(b)]

Subpart Q—Records and Reports

§ 121.561 Crewmember and dispatcher record.

Each air carrier shall—

(a) Maintain a current record of each crewmember and aircraft dispatcher that shows whether or not he complies with this chapter (e.g., proficiency and route checks, airplane and route qualifications, training, physical examinations, and flight time records); and

(b) Record each action taken concerning the release from employment or physical or professional disqualification of any flight crewmember or aircraft dispatcher and keep the record for at least six months thereafter.

[Revision note: Based on § 40.501]

§ 121.563 Airplane record.

Each air carrier shall maintain a current list of each airplane that it operates in scheduled air transportation and shall send a copy of the record and each change to the FAA Air Carrier District Office charged with the overall inspection of its operations. Airplanes of another air carrier operated under an interchange agreement may be incorporated by reference.

[Revision note: Based on § 40.502]

§ 121.565 Dispatch release.

(a) The dispatch release may be in any form but must contain at least the following information concerning each flight:

(1) Identification number of the aircraft.

(2) Trip number.

(3) Departure airport, intermediate stops, destination airports, and alternate airports.

(4) A statement of the type of operation (e.g., IFR, VFR).

(5) Minimum fuel supply.

(b) The dispatch release must contain, or have attached to it, weather reports available, weather forecasts or a combination thereof, for the destination airport, intermediate stops; and alternate airports, that are the latest available at the time the release is signed. It may include any additional available weather reports or forecasts that the pilot in command or the aircraft dispatcher considers necessary or desirable.

[Revision note: Based on § 40.503]

§ 121.567 Load manifest.

The load manifest must contain the following information concerning the loading of an airplane at takeoff time:

(a) The weight of the airplane, fuel and oil, cargo (including mail and baggage), and passengers.

(b) The maximum allowable weight for that flight.

(c) The total weight computed under approved procedures.

(d) Evidence that the airplane is loaded according to an approved schedule that insures that the center of gravity is within approved limits.

[Revision note: Based on § 40.504 (less (b))]

§ 121.569 Disposition of load manifest, dispatch release, and flight plans.

(a) The pilot in command of an airplane shall carry in the airplane to its destination—

(1) A copy of the completed load manifest (or information from it, except information concerning cargo and passenger distribution);

(2) A copy of the dispatch release; and

(3) A copy of the flight plan.

(b) The air carrier shall keep copies of the records required in this section for at least three months.

[Revision note: Based on § 40.505]

§ 121.571 Maintenance records.

(a) Each air carrier shall keep, at its principal maintenance base, current records of total time in service, time since last overhaul, and time since last inspection, for each major component of each airframe, engine, propeller, and, where practicable, appliance.

(b) An air carrier may discontinue total time in service records if it shows that the service life of component parts is safely controlled by inspection, overhaul, or parts retirement procedures. The Administrator may require the keeping of total time in service records for a part when he finds that other procedures will not safely limit the service life of that part.

(c) An airplane component for which complete records required by this section are not available may be placed in service if—

(1) It is of a type for which total time inservice records are not required by paragraph (b) of this section;

(2) Parts that the Administrator or manufacturer limits to a specific total time in service are retired and replaced by new parts; or

(3) It has been properly overhauled or rebuilt and the overhaul or rebuilding is recorded in the maintenance records.

[Revision note: Based on § 40.506]

§ 121.573 Maintenance log.

(a) Each person who takes action in the case of a reported or observed failure or malfunction of an airframe, engine, propeller, or appliance that is critical to the safety of flight shall make, or have made, a record of that action in the airplane's maintenance log.

(b) Each air carrier shall have an approved procedure for keeping adequate copies of the record required in paragraph (a) of this section in the airplane in a place readily accessible to each flight crewmember and shall put that procedure in the air carrier manual.

[Revision note: Based on § 40.507]

§ 121.575 Mechanical reliability reports.

(a) Each air carrier shall report the occurrence or detection of each failure, malfunction, or defect concerning—

(1) Fires during flight and whether the related fire-warning system functioned properly;

(2) Fires during flight not protected by a related fire-warning system;

(3) False fire warning during flight;

(4) An engine exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components;

(5) An airplane component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or passenger cabin during flight;

(6) Engine shutdown during flight because of flameout;

(7) Engine shutdown during flight when external damage to the engine or airplane structure occurs;

(8) Engine shutdown during flight due to foreign object ingestion or icing;

(9) Engine shutdown during flight of more than one engine;

(10) A propeller feathering system or ability of the system to control overspeed during flight;

(11) A fuel or fuel-dumping system that affects fuel flow or causes hazardous leakage during flight;

(12) A landing gear extension or retraction or opening or closing of landing gear doors during flight;

(13) Brake system components that result in loss of brake actuating force when the airplane is in motion on the ground;

(14) Airplane structure that requires major repair;

(15) Cracks, permanent deformation, or corrosion of airplane structures, if more than the maximum acceptable to the manufacturer or the FAA; and

(16) Airplane components or systems that result in taking emergency actions during flight (except action to shutdown an engine).

(b) For the purpose of this section "during flight" means the period from the moment the airplane leaves the surface of the earth on takeoff until it touches down on landing.

(c) In addition to the reports required by paragraph (a) of this section, each air carrier shall report any other failure, malfunction, or defect in an airplane that occurs or is detected at any time if, in its opinion, that failure, malfunction, or defect has endangered or may endanger the safe operation of an airplane used by it.

(d) Each air carrier shall send each report required by this section, in writing, covering each 24-hour period beginning at 0900 hours local time of each day and ending at 0900 hours local time on the next day, to the FAA maintenance inspector assigned to its operations. The report must be delivered to him by 0900 hours local time on the following day. However, a report that is due on Saturday or Sunday may be delivered on the following Monday and one that is due on a holiday may be delivered on the next workday.

(e) The air carrier shall transmit the reports required by this section in a manner and on a form that is convenient to its system of communication and procedure, and shall include in the first daily report as much of the following as is available:

(1) Type and identification number of the airplane.

(2) The name of the operator.

(3) The date, flight number, and stage during which the incident occurred (e.g., preflight, takeoff, climb, cruise, descent, landing, and inspection).

(4) The emergency procedure effected (e.g., unscheduled landing and emergency descent).

(5) The nature of the failure, malfunction, or defect.

(6) Identification of the part and system involved, including available information pertaining to type designation of the major component and time since overhaul.

(7) Apparent cause of the failure, malfunction, or defect (e.g., wear, crack, design deficiency, or personnel error).

(8) Whether the part was repaired, replaced, sent to the manufacturer, or other action taken.

(9) Whether the airplane was grounded.

(10) Other information necessary for identification, determination of seriousness, or corrective action.

(f) Failures, malfunctions, or defects reported under the accident reporting provisions of Part 320 of the regulations of the Civil Aeronautics Board need not be reported under this section.

(g) No person may withhold a report required by this section even though all information required in this section is not available.

(h) When an air carrier gets additional information, including information from the manufacturer or other agency, concerning a report required by this section, it shall expeditiously submit it as a supplement to the first report and reference the date and place of submission of the first report.

[Revision note: Based on § 40.508]

§ 121.577 Mechanical interruption summary report.

Each air carrier shall regularly and promptly send a summary report on the following occurrences to the Administrator:

(a) Each interruption to a scheduled flight, unscheduled change of airplane en route, or unscheduled stop or diversion from a route, caused by known or suspected mechanical difficulties or malfunctions that are not required to be reported under § 121.575.

(b) The number of engines removed prematurely because of malfunction, failure or defect, listed by make and model and the aircraft type in which it was installed.

(c) The number of propeller featherings in flight, listed by type of propeller and engine and airplane on which it was installed. Propeller featherings for training, demonstration, or flight check purposes need not be reported.

[Revision note: Based on § 40.509]

§ 121.579 Alteration and repair reports.

(a) Each air carrier shall, promptly upon its completion, prepare a report of each major alteration or major repair of an airframe, engine, propeller, or appliance.

(b) The air carrier shall submit a copy of each report of a major alteration to, and shall keep a copy of each report of a major repair available for inspection by, the representative of the Administrator who is assigned to the carrier.

[Revision note: Based on § 40.510]

§ 121.581 Maintenance release.

(a) When a maintenance organization releases an aircraft to flight operations, a maintenance inspector or a person authorized by the inspection organization shall prepare and sign a maintenance release or appropriate entry in the maintenance log certifying that the airplane is airworthy.

(b) If a maintenance release form is used, the air carrier shall give a copy to the pilot in command and shall keep an appropriate record for at lease two months.

[Revision note: Based on § 40.511]

§ 121.583 Communication records.

Each air carrier shall record each en route radio contact between the air carrier and its pilots and shall keep that record for at least 30 days.

[Revision note: Based on § 40.512]

PART 121 DISTRIBUTION TABLE

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40.37	121.53
40.37–1	(2)
40.38	121.55
40.50	121.71
40.51	121.73
40.51–1	(2)
40.51–2	(2)
40.52	121.75
40.53	121.77
40.60	121.91
40.61	121.93
40.62 (1st sentence)	121.95
40.62 (less 1st sentence)	121.97
40.63	121.99
40.63–1	(2)
40.70	121.111
40.70–1	(2)
40.70–2	(2)
40.70–3	(2)
40.71	121.115
40.71–1	(2)
40.72	121.113
40.72–1	(2)
40.73	121.117
40.74	121.119
40.75	121.121
40.76	121.111
40.76–1	(2)
40.77	121.123
40.77–1	(2)
40.78	121.125
40.90	121.111
40.90–1	(2)
40.91	121.137

See footnotes at end of table.

PART 121 DISTRIBUTION TABLE—Continued

Present section	Revised section
40.91–1	(3)
40.91–2	(3)
40.92	121.139
40.92–1	(3)
40.93	121.141
40.93–1	(3)
40.93–2	(3)
40.94	121.143
40.94–1	(3)
40.110	121.161
40.111	(3)
40.112	121.163
40.113	121.165
40.114	121.167
40.115	121.169
40.116	121.171
40.117	121.173
40.118	121.175
40.119	121.177
40.120	121.179
40.121	121.181
40.122	121.183
40.123	121.185
40.124	121.187
40.125	121.189
40.126	121.191
40.127	121.193
40.128	121.195
40.129	121.197
40.130	121.199
40.131	121.201
40.132	121.203
40.133	121.205
40.134	121.207
40.135	121.209
40.136	121.211
40.137	121.213
40.138	121.215
40.139	121.217
40.140	121.219
40.141	221.221
40.142	121.223
40.143	121.225
40.150	121.227
40.151	121.229
40.152	121.231
40.153	121.233
40.154	121.235
40.170	121.251
40.170–1	(3)
40.170–2	(3)
40.170–3	(3)
40.171	121.253
40.172	121.255
40.172–1	(3)
40.173	121.257
40.173–1	(3)
40.174	121.259
40.175 (less (g))	121.261
40.175(g)	(4)
40.175–1(a)	121.261
40.175–1 (less (a))	(3)
40.176	121.263
40.177	121.265
40.178	121.267
40.179	121.269
40.200	121.271
40.201	121.273
40.202	121.275
40.202–1	(3)
40.202–2	(3)
40.202–3	(3)
40.202–4	(3)
40.202–5	(3)
40.202–6	(3)
40.202–T	121.277
40.203	121.279
40.203–1	(3)
40.203–2	(3)

See footnotes at end of table.

PART 121 DISTRIBUTION TABLE—Continued

Present section	Revised section
40.203–3	(3)
40.203–4	(3)
40.203–T	121.281
40.204	121.283
40.205	121.285
40.205–1	121.285
40.205–2	(3)
40.206	121.287
40.207	121.289
40.208	121.291
40.230	121.297
40.230–1	(3)
40.231	121.299
40.232	121.301
40.232–1	(3)
40.233	121.303
40.240	121.321
40.241 (less (a))	121.323
40.241(a)	121.325
40.241–1	(3)
40.242	121.327
40.243	121.329
40.260	121.341
40.261	121.345
40.263	121.347
40.265	121.351
40.266	121.353
40.267	121.355
40.280	121.371
40.281	121.373
40.282	121.375
40.284	121.379
40.286	121.380
40.286–1	(3)
40.288	121.381
40.289(c)	121.371
40.289 (less (c))	121.373, .375, .379, .380, .381
40.300(a) (1st sentence) and (b)	121.391
40.300 (less 1st sentence of (a) and less (b))	121.393
40.301	121.395
40.302	121.397
40.302–1	(3)
40.302–2	(3)
40.302–3	(3)
40.302–4	(3)
40.303	121.399
40.303–1	(3)
40.304	121.401
40.305	121.403
40.307	121.407
40.307–1	(3)
40.310	121.409
40.320	121.421
40.340	121.441
40.351	121.451
40.352	121.453
40.353	121.455
40.354	121.456
40.355	121.457
40.355–1	(3)
40.356	121.459
40.356–1	(3)
40.357	121.461
40.358	121.463
40.359	121.465
40.360	121.467
40.361	121.469
40.362	121.471
40.363	121.473
40.364	121.475
40.365	121.477
40.370	121.479
40.371	121.481
40.372	121.483
40.381	121.501
40.382	121.503
40.383	121.505
40.384	121.507

PART 121 DISTRIBUTION TABLE—Continued

Present section	Revised section
40.385	121.509
40.386	121.511
40.387	121.513
40.388	121.515
40.389	121.517
40.390	121.519
40.390–1	(3)
40.390–2	(3)
40.390–3	(3)
40.391	121.521
40.391–1	(3)
40.392	121.523
40.393	121.525
40.394	121.527
40.395	121.529
40.396	121.531
40.397	121.533
40.405	121.535
40.405–1	(3)
40.406	121.537
40.406–1	(3)
40.406–2	(3)
40.406–3	(3)
40.407	121.539
40.408	121.541
40.409	121.543
40.411	121.545
40.412	121.547
40.501	121.561
40.501–1	(3)
40.502	121.563
40.503	121.565
40.503–1	(3)
40.504 (less (b))	121.567
40.504(b)	121.547
40.505	121.569
40.506	121.571
40.507	121.573
40.508	121.575
40.509	121.577
40.510	121.579
40.511	121.581
40.511–1	(3)
40.512	121.583
SR 422 § 40T.80	121.111
SR 422 § 40T.81 (less (b) and (d))	121.127
SR 422 § 40T.81(b)	121.133
SR 422 § 40T.81(d)	121.111
SR 422 § 40T.82	121.127
SR 422 § 40T.83 (less (b))	121.129
SR 422 § 40T.83(b)	121.131
SR 422 § 40T.84(a)	121.133
SR 422 § 40T.84 (less (a))	121.135
SR 422A § 40T.80	121.111
SR 422A § 40T.81 (less (b) and (d))	121.127
SR 422A § 40T.81(b)	121.133
SR 422A § 40T.81(d)	121.111
SR 422A § 40T.82	121.127
SR 422A § 40T.83 (less (b))	121.129
SR 422A § 40T.83(b)	121.131
SR 422A § 40T.84(a)	121.133
SR 422A § 40T.84 (less (a))	121.135
SR 422B § 40T.80	121.111
SR 422B § 40T.81 (less (b) and (d))	121.127
SR 422B § 40T.81(b)	121.133
SR 422B § 40T.81(d)	121.111
SR 422B § 40T.82	121.127
SR 422B § 40T.83 (less (b))	121.129
SR 422B § 40T.83(b)	121.131
SR 422B § 40T.84(a)	121.133
SR 422B § 40T.84 (less (a))	121.135
SR 440	121.485

[F.R. Doc. 64–4630; Filed, May 8, 1964; 8:45 a.m.]

[1] Transferred to Part 1 [New].
[3] Surplusage.
[3] Not a rule.
[4] Obsolete.